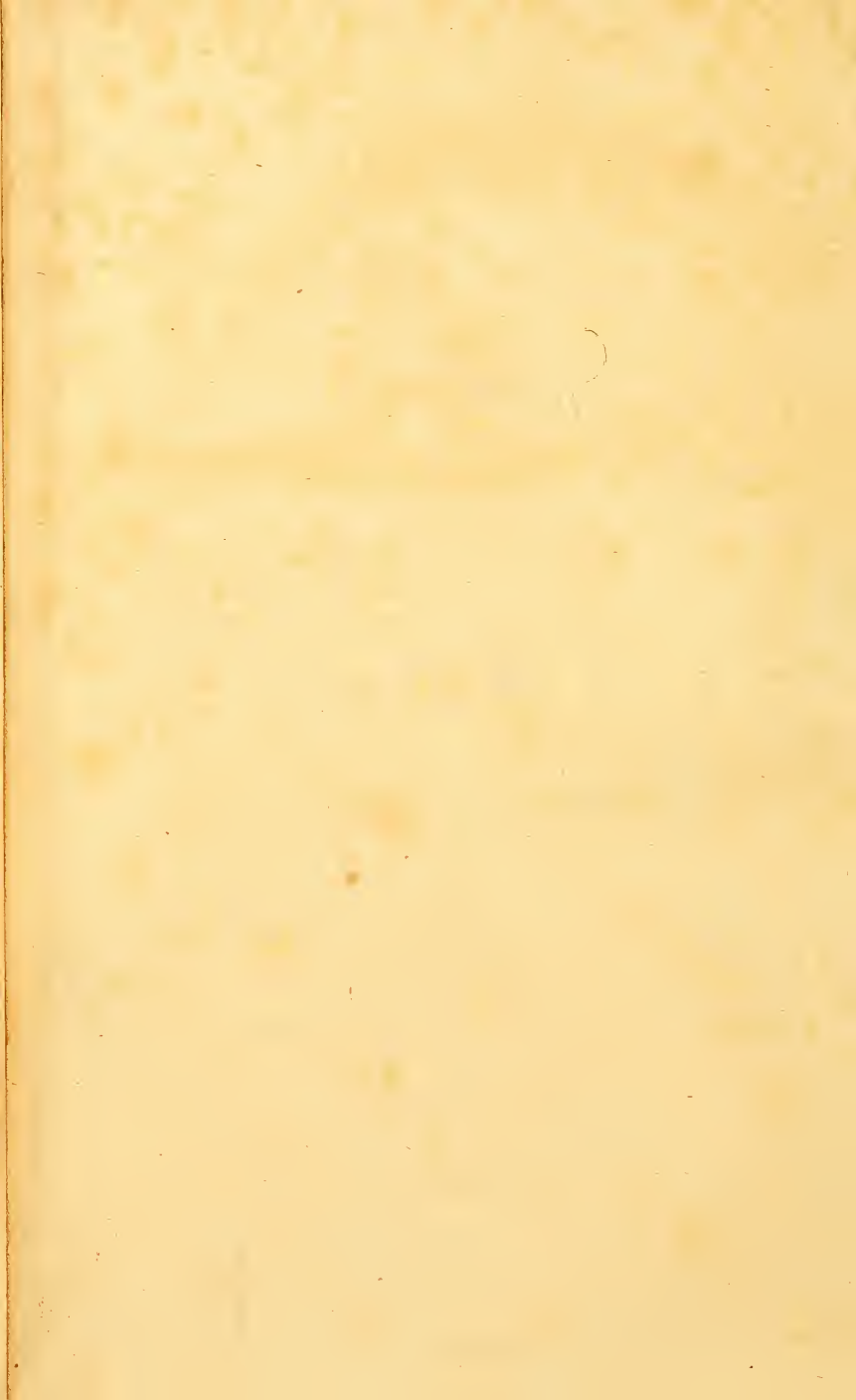


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A
COURSE
OF
MEDICAL STUDIES:
CONTAINING
A COMPARATIVE VIEW
OF
THE ANATOMICAL STRUCTURE
OF MAN AND OF ANIMALS;

A HISTORY OF DISEASES;
AND
AN ACCOUNT OF THE KNOWLEDGE HITHERTO ACQUIRED WITH
REGARD TO THE REGULAR ACTION OF THE
DIFFERENT ORGANS.

*A WORK CHIEFLY DESIGNED FOR THE USE OF
MEDICAL STUDENTS.*

BY J. BURDIN, M. D.

TRANSLATED FROM THE FRENCH.

IN THREE VOLUMES.

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MEDICAL STUDIES.

SYSTEM OF CIRCULATION.

OF THE VEINS.

378. THE arterial blood, after it has been distributed to all the parts of the organization, and has furnished them with the materials necessary for the different changes which are there continually taking place, returns by two orders of vessels, the veins and the lymphatics.

The greater part of the blood is brought back by the veins. This part is that which has undergone the least changes, and which preserves a brown red colour: the lymphatics collect the serous residua of all the secretions, and the product of digestion, which they pour into the venous system.

The sides of the veins are thin, extensible and flexuous. These vessels, in general, accompany the arteries; exhibit frequent anastomoses, and in

the inside have valvular folds which oppose the return of the blood.

379. The veins seem to arise from every part of the organs by exceedingly fine radiculæ. These radiculæ unite to form veins, which afterwards continue to unite in order to form the rami, branches, and principal trunks.

The venous blood proceeds to the heart by two large trunks, one of which brings it back from the thoracic limb, from the head and from the breast: the other brings back that which has been distributed to the pelvian limb, the pelvis, and the abdomen.

We shall here describe the general course pursued by the veins in the formation of these two trunks.

380. The veins which bring back the blood from the thoracic limb may be distinguished into profound and superficial. The profound are placed between the muscles, and exhibit nearly the same order of division as the arteries which they accompany. The rest are *superficial*, and proceed beneath the skin.

Of the *profound* veins, some arise at the extremity of the fingers, *the digital*, ascend along their palmar face, unite in the hand, and form an arch, to which the *metacarpian*, *carpian*, and *superpalmar*

palmar rami proceed. Each of the extremities of this arch gives birth to a vein, which ascends along the fore-arm, the *radial*, *cubital*, accompanying the arteries of the same name. In their passage they receive rami, some of which follow the arterial divisions, and others communicate with the superficial veins. When they reach the bend of the arm these two veins unite, and again separate to form two others, the *humeral* (brachial). These veins accompany the humeral artery as far as the superior part of the arm, and receive rami corresponding to those given out by the artery. Of these rami, some come from the circumference of the articulation of the elbow, *the collaterals of the cubitus*; the rest bring back the blood from the muscles: *the muscular* and *inter-muscular*.

There are three principal *superficial* veins: two on the sides of the fore-arm, and one in the middle.

The cutaneous radial (cephalic).

The cutaneous cubital (basilic).

The cutaneous median.

The median arises in a great number of rami from the palm of the hand, and the radial edge of the thumb; it ascends on the middle of the palmar face of the fore-arm, anastomoses with the neighbouring veins, and terminates at the bend of the arm, where it divides itself into two branches,

which proceed, one to the right and the other to the left, and unite themselves to the profound radial and cubital veins.

The *cutaneous cubital* arises in small rami, which proceed along the last two fingers, on the back of the hand (the *salvatella*), and along the cubital edge of the fore-arm. In this passage it receives several rami, which come from the neighbouring integuments. When it reaches the bend of the arm, it furnishes a branch of communication (the *basilic median*) which proceeds to one of those of the median. It then continues along the interior edge of the arm, and with several others concurs towards the formation of the axillary trunk.

The *cutaneous radial* comes from the superpalmar face of the first two fingers, passes between the first two bones of the metacarpus (cephalic of the thumb), and anastomoses with the preceding on the back of the hand, forming an arch, to the convexity of which the rami arising from the third and fourth fingers proceed : it then takes a direction along the radial edge of the fore-arm, and when it reaches the bend of the arm it furnishes a branch, which communicates with one of those of the median (cephalic median), and ascends along the radial edge of the arm, receiving muscular and cutaneous rami. This vein then proceeds between the super-acromio-humerian and the costo-humerian

rian muscles, and discharges itself below the clavicle in the common trunk.

The humeral veins, formed by the junction of the profound and superficiais of the fore-arm, unite towards the hollow of the arm-pit, and produce the AXILLARY VEIN.

This venous trunk passes between the clavicle and the first rib, and receives five principal branches which bring back the blood from the shoulder and the exterior face of the thorax.

The scapulo-humeral *The circumflex.*

Super-scapular. : *Acromial.*

Sub-scapular. : *Common scapular.*

Sterno-thoracic. } *Thoracic.*

Costo-thoracic. }

Besides these branches, the axillary vein often receives the cutaneous radial; it then passes between the trachelo-costal muscles, and penetrates into the thorax, where it assumes the name of the SUB-CLAVIAN.

381. The sub-clavian vein is formed by the union of six principal branches :

1st. THE CUTANEOUS RADIAL.

2d. The veins which come from the first inter-costal spaces, from the bronchiæ, the mediastinum, and the pericardium : these by their union form the SUPERIOR INTER-COSTAL.

3d. Those which arise from the thyroid gland,

from the thymus and the tracheal artery: these by their union form the **INFERIOR THYROIDIAN**.

4th. Those which come from the sides of the abdomen, anastomosing with a sub-pubic, and those furnished by the interior sides of the thorax, which unite to the inter-costal veins: these by their union produce the **SUB-STERNAL**.

5th. Those which bring back the blood from a part of the head and neck, forming two flexuous branches. The *exterior* takes its origin under the integuments of the occiput. It often receives a ramus from the lateral sinus, which issues from the cranium through the mastoidian foramen. It then descends along the transverse apophyses of the vertebræ of the neck, receiving rami from the neighbouring muscles, and unites to the *interior branch*, towards the lower part of the neck. The latter arises from the lateral sinus, descends along the vertebral canal, receives vertebral rami, and forms frequent anastomoses with the exterior branch by rami which pass between the transverse apophyses. The result of the union of these two branches is **THE POSTERIOR CEREBRAL**.

6th. Those which bring back the blood from the lateral parts of the head and the integuments of the neck are very numerous, and exceedingly variable. *Some* of them come from the temporal region, from the circumference of the ear, and from a part of the face. These form a temporal branch, which

descends before the mastoid apophysis, anastomoses with that of the forehead, and receives the *occipital*. The latter is produced by the rami which come from the occiput and the neck. The *rest* come from the muscles of the neck and of the shoulder: *the trachelo-cervical, trachelo-scapular*. All these veins unite to form a large branch, THE TRACHELO-SUB-CUTANEOUS.

This branch, after communicating with the cephalic trunk, descends on the sides of the neck, between the cutaneous and sterno-mastoidian muscle, and frequently anastomoses with the cutaneous radial*.

The six veins here described unite above the clavicle, and form the SUB-CLAVIAN VEIN.

On the right side, this vein proceeds directly into the thoracic vein; and on the left it unites to the trunk which brings the blood back from the head.

382. The blood returns from the head chiefly by two large trunks. One of them brings back that which is distributed to the face; the other brings back the greater part of that of the encephalic organ.

The veins which bring back the blood from the

* The inferior thyroidian and the sub-sternal of the right side generally proceed to the trunk of the thoracic vena cava, and the superior inter-costal to the prælumbo-thoracic vein.

different parts of the face are exceedingly numerous. Some of them proceed from the thyroid gland, unite with rami from below the tongue, *the sub-lingual* (ranine); from the os hyoides, and from the larynx: by their union they produce the SUPERIOR THYROIDIAN.

Others bring back the blood from the tongue and from its muscles, and unite to form the LINGUAL.

Some return from the larynx and the velum palati: these often unite with the preceding, or produce a distinct branch, the PHARYNGIAN.

Those which are spread over the forehead unite, and form a ramus called the *median of the forehead* (frontal, *préparate*, which descends towards the large angle of the eye, on the sides of the nose and the mouth. In this passage it receives the *palpebral*, *superciliar*, *nasal*, and *labial* rami: it then passes over the sides of the jaw, descends on the chin, receives the *sub-mentals*, and rami from the amygdalæ and the velum palati. The union of all these rami constitutes the LABIAL (facial).

Those which return from the pterygoid fossa, the guttural region, and the jaw, furnish the *pterygoidian*, the *spheno-palatine*, the *super-maxillary* (buccal), the *sub-orbital*, and the *maxillo-dentary*. These by their union form a branch which descends towards the angle of the jaw, exhibiting

frequent anastomoses with the neighbouring veins, and terminates either in the trachelo-sub-cutaneous vein, in the cephalic vein, or in their anastomotic trunk: THE MAXILLO-BUCCAL (interior maxillary).

All these veins, arising from the different parts of the face, unite to form a common trunk, THE MAXILLO-FACIAL (branch of the jugular), which unites with the trunk of the veins of the brain.

The veins of the encephalic organ comprehend those which proceed, 1st, from the meninx; 2d, from the cerebrum; 3d, from the cerebellum and the mesencephalon; 4th, from the rachidian prolongation and its covering; 5th, from the orbit.

The veins of the encephalon exhibit a disposition altogether peculiar. They are small and numerous, have no valves, and their sides are exceedingly thin. They are extremely flexuous, and present frequent anastomoses. As these veins do not accompany the arteries and their rami, instead of forming branches and trunks by their union, they proceed into the sinuses formed by the meninx. The most considerable of these sinuses extends from the ethmoidal ridge to the occiput, following the convexity of the cranium, *median sinus* of the brain: it continues backwards with two *lateral sinuses*, which proceed to the occipitopetrous hiatus. At the base of the median septum is a sinus which receives the blood from the choroidian
veins

veins (the choroidian), and proceeds into one of the lateral sinuses. The other sinuses are situated at the base of the cranium. *See the description of the brain.*

The veins which spread over the meninx accompany the arteries, and proceed into the sinus of the base of the cranium: *the meningian.*

Of the veins of the cerebrum, some, which are superficial, arise from every point of that organ, spread over its surface, and proceed chiefly into the median sinus and the lateral sinuses: *the lobar.* The rest arise profoundly from the ventricles of the brain and the plexus choroides: these proceed into the choroidian sinuses: *the choroidian* (vein of Galen).

The veins of the cerebellum and the mesencephalon proceed into the lateral sinuses, and the petrous or the choroidian sinus.

The veins which come from the covering of the vertebral prolongation proceed on each side over the bodies of the vertebræ, and extend from the sacrum to the lateral sinuses: in their passage they receive and give out rami, which pass through the inter-vertebral holes, and communicate, at the cervical region, with rami of the vertebral vein; at the dorsal region with inter-costal rami; at the loins, with others proceeding from the lumbar veins; and at the sacrum, with rami which come from the lateral sacral veins,

These

These two veins in their passage frequently anastomose with each other, forming reticulated arches on the meninx : *the meningo-rachidian*.

The cerebral prolongation furnishes also two veins, one of which passes before and the other behind the rachis. They accompany the arteries, and, with those already mentioned, proceed into the lateral sinuses : *the median rachidian*.

The veins which proceed from the orbit are the lacrymal, the super-orbital, the ciliar, the ethmoidal, the muscular, the palpebral, and the central of the retina : by their union they form the *orbital* (ophthalmic), which proceeds into the cavernous sinus.

The blood, brought back from all these veins of the brain, proceeds into the different sinuses, which unite with the laterals.

The lateral sinuses are then continued with a vein which, at its origin, has a dilatation lodged in the occipito-petrous (hiatus gulph of the jugular).

This vein, the *anterior cerebral*, unites at the height of the larynx with the maxillo-facial, and the result of this union is the **CEPHALIC TRUNK** (interior jugular).

This trunk descends on the exterior side of the carotid arteries, under the sterno-mastoidian and some other muscles. In this passage it receives some muscular and cutaneous rami : it exhibits anastomoses with the exterior jugular, and unites
with

with the sub-clavian vein to form the large trunk of the THORACIC VENA CAVA (superior vena cava).

This vena cava descends in the thorax, somewhat obliquely from right to left. Before it penetrates into the pericardium, it receives a *large vein*, which brings back the blood from the interior sides of the thorax, and which establishes a communication between the two venæ cavæ.

This large *odd* vein (azygos) takes its origin in the region of the loins, by two anastomotic rami, which come either from the right renal, or from one of the lumbar, or from the thoracic vena cava. It passes into the thorax, and unites to several veins which come from the sides of the breast, and to one which comes from the abdominal cavity.

That which comes from the abdominal cavity often arises from the left renal, or from one of the lumbar veins of that side: it traverses the diaphragm with the aorta, receives the veins which come from the last five inter-costal spaces on the left side, and turns to the right to unite with the preceding trunk: *the small prælumbo-thoracic* (small azygos).

The veins which bring back the blood from the interior of the thorax are numerous; some of them come from the inter-costal spaces of the last sternal ribs of the left side, *left inter-costals*; others from the inter-costal spaces of the right side, *the superior*
and

and *inferior right inter-costals*; and the last proceed from the *œsophagus*, the *œsophagian*; from the posterior mediastinum, the *mediastine*; and from the *bronchiæ*, the *bronchial*.

All these veins unite in succession and form a trunk, which ascends on the right side of the dorsal vertebræ, and empties itself into the thoracic vena cava, at the height of the third vertebra of the back: THE PRÆLUMBO-THORACIC VEIN (*azygos*).

The thoracic vena cava descends behind the sternum, in the substance of the mediastinum, before and a little to the right of the aorta; traverses the pericardium, and proceeds into the right auricle of THE HEART.

383. The veins which bring back the blood from the pelvian limb may be distinguished, like those of the thoracic limb, into *profound* and *superficial*.

Of the profound veins, some come from the plantar face of the toes, the *digital*: they unite under the sole of the foot, and form an arch from which two branches arise: one of these runs along the interior edge of the foot, the *interior plantaris*; the other, which is larger, extends along its exterior edge: *exterior plantaris*.

Both receive *sub-tarsian* and *sub-metatarsian* rami. They then unite to form a vein which passes behind the interior malleolus, and ascends behind the tibia, the *posterior tibial*, accompanying the

the artery of the same name. This vein receives that which brings back the blood from the cavity of the tibia, *medullary of the tibia*, and that which accompanies the *peronæal* artery. The posterior tibial, when it reaches the hollow of the ham, receives another vein, which arises from the super-plantar face of the toes and of the foot, and which is formed by the *super-tarsian*, the *super-metatarsian*, and the *malleolar rami*. This vein then ascends before the tibia, the *anterior tibial*, following the artery of the same name, and in its passage receives several muscular rami.

The anterior tibial and the posterior unite, in the hollow of the ham, into one trunk, from which arise two other veins which accompany the poplitean artery: *the poplitean*. In their passage they receive a great number of veins.

1st. Those which bring back the blood from the circumference of the articulation of the knee: *the poplitean articular*.

2d. A *superficial* vein, which arises from the integuments of the super-plantar face of the foot, advances along its exterior edge, passes behind the malleolus, and runs along the peronæal edge of the leg: the *peronæo-malleolar* (exterior or small saphene).

In this passage it receives several rami: one of them, which is *superficial*, comes from the circumference of the articulation of the foot, and ascends
behind

behind the leg, along its middle part: *the median of the leg*.

The poplitean veins, formed by the union of all the preceding, traverse the ischio-femorian tendon, and constitute the FEMORAL VEIN, which reascends along the interior part of the thigh, and receives several muscular branches. One, which is very large, brings back the blood from the muscles of the posterior part of the thigh: *the inter-muscular or profound*.

Another, equally large, and *superficial*, arises from the super-plantar face of the foot, proceeds along its interior edge, passes over the malleolus, and ascends along the tibial edge of the leg: *the tibio-malleolar* (large or interior saphene). This vein, at the poplitean region, receives a strong ramus, which comes from one of the divisions of the median of the leg. The tibio-malleolar then continues on the interior side of the knee and the thigh, as far as the inguinal region: in its passage it receives rami from the integuments of the leg, of the thigh, and of the abdomen.

The FEMORAL VEIN, when it reaches near the inguinal region, receives the veins of the scrotum, the *scrotal*; and those of the integuments of the groin, *the inguinal*; it then penetrates into the abdomen, passing below the crural arch, and ascends along the prælumbo-trochantinian muscle.

In this passage, it receives first a vein which
brings

brings back the blood from the muscles of the abdomen, and which turns round on the ridge of the bones of the ilium: *the circumflex of the ilium* (anterior iliac).

2d. That which brings back the blood from the muscles of the abdomen, and which at its origin anastomoses with rami of the inter-costal and the sub-sternal veins: *the super-pubian* (epigastric).

3d. An odd vein which passes over the middle of the sacrum: *the median of the sacrum* (the middle sacral).

The union of these three veins produces a large branch, *the iliac vein* (exterior iliac), which unites to that produced by all the veins which bring back the blood from the organs contained in the cavity of the pelvis.

These veins are,

1st. Those which return from the muscles of the nates and the posterior region of the thigh: *the fessières* (posterior iliac).

2d. That which brings back the blood from the organs of generation: *the sub-pelvic* (interior pudical).

3d. That produced by rami proceeding from the bladder, the seminal vesicles, the rectum, and the uterus: *the vesico-prostatic*.

4th. That produced by the veins of the interior part of the thigh: *the sub-pubio-femoral* (obturator).

5th. Those

5th. Those which come from the sides of the sacrum: *the lateral sacral*.

6th. That which brings back the blood from the iliaco- and prælumbo-trochantinian muscles: *the iliaco-muscular*.

All these branches unite to form the ILIAC VEIN.

The two iliac veins unite on the body of the fourth lumbar vertebra, and produce a large trunk, which proceeds to the right, on the side of the bodies of these vertebræ: the ABDOMINAL VENA CAVA (the inferior vena cava).

This vein receives a very large number of branches:

1st. Four or five veins on each side, placed between the lumbar vertebræ, and which bring back the blood from the muscles of the abdomen and loins: *the lumbar*. They communicate with rami of the inter-costals, and with vertebral rami.

2d. A vein which comes from the testicle, and ascends along the cord of the spermatic vessels: *the testicular* (spermatic).

In the female the corresponding vein is that of the *ovarium*.

3d. The veins which proceed from the kidneys, the super-renal capsules, and the inferior side of the diaphragm: *the renal, super-renal, and sub-diaphragmatic*.

The veins which bring back the blood from the

different organs of digestion traverse the liver before they proceed into the abdominal vena cava.

The veins which furnish blood to the liver are those of the spleen, the pancreas, the mesentery, the intestines, and the stomach.

1st. The vein of the spleen proceeds, in a transverse direction, to the right, below the pancreas : *the splenic*. It receives, in its passage, veins which proceed from the stomach, *the gastro-splenic* (short vessels); from the stomach and the epiploon, *the gastro-epiploic*; from the pancreas, *the pancreatic*; and from the epiploon, *the epiploic*.

2d. The vein which brings back the blood from the small intestines, *the great mesenteric*, (superior mesenteric). Its divisions correspond to those of the artery; it forms in the same manner a curvature, the concavity of which, turned to the right, receives the three right colic veins and the right gastro-epiploic vein. Its convexity receives a great number of branches, which bring back the blood from the duodenum, the jejunum, and the ileum.

3d. The second mesenteric, which is smaller, is produced by the veins of a portion of the large intestines, *the small mesenteric* (inferior mesenteric); it accompanies the divisions of the artery of the same name.

The union of these three branches produces a large trunk, *the sub-hepatic* (vena portæ), which proceeds obliquely to the right, and, before it enters
the

the liver, receives a vein which proceeds from the stomach, *the right gastric* (stomachic coronary); one from the gall-bladder, *the cystic*; one from the pylorus, *the pyloric*; and one from the duodenum, *the duodenal*.

The sub-hepatic vein, when it enters the liver, swells up, towards its transverse furrow, and forms a sinus, whence proceed five or six branches, which divide and subdivide themselves to be distributed to every point of that viscus. These hepatic veins, which perform the office of arteries, exhibit a structure altogether peculiar. Their sides are thick; they are enveloped by a membranous tunic, and have no valvular folds in the inside: they accompany the divisions of the hepatic artery.

The blood, which is distributed to every part of the liver by the sub-hepatic vein and the hepatic artery, returns by a second order of veins, the *super-hepatic* (single hepatics). These veins, by their successive union, form three branches, which issue from the liver towards its convex edge, and unite with the common trunk of all the preceding veins, THE ABDOMINAL VENA CAVA, near its passage through the pillars of the diaphragm.

This vein, after traversing the diaphragm, penetrates immediately into the pericardium, and proceeds into the sinus of the venæ cavæ.

384. In the foetus, the vein which brings-back the blood from the placenta, *the umbilical*, is di-

vided into two branches; one of these proceeds into the sinus of the sub-hepatic vein; the other proceeds directly into the vena cava. These two veins become obstructed soon after birth.

385. The veins which come from the different points of the heart unite into two branches, *the cardiac* (the coronary).

The anterior veins arise from the anterior face of the heart, near its apex; ascend in the furrow which separates the ventricles, and turn round between the sinus of the pulmonary veins and the aortic ventriclê, as far as the posterior part of the heart.

The posterior cardiac veins come also from the apex of the heart: they proceed backwards in the furrow which separates the ventricles, and generally unite to the preceding to form a trunk, which opens into the sinus of the venæ cavæ.

OF THE LYMPHATICS.

386. THE thinnest part of the blood, the lymphatic residuum of all the secretions, the serous matter secreted by the surfaces of different organs, and deposited either in the large cavities or in the cells of all the tissues, and the chyle produced by digestion, are all collected by the lymphatic vessels. These vessels terminate in two trunks, which proceed into the sub-clavian veins. Of these two trunks, the left is much stronger: it brings back the lymph from the whole inferior part of the body, and from the half of the superior.

The lymphatic vessels are membranous, transparent, exceedingly thin, and much more numerous than the veins, which they accompany. Like the veins, they are generally arranged in two strata: one, which is superficial, proceeds below the skin; the other, which is profound, is placed between the muscles and in the substance of various organs. Like the veins, these vessels have in the inside valvular folds, which oppose the return of the fluids, and exhibit frequent anastomoses.

The lymphatic vessels have their origin at the surface of all the membranes, and the sides of the cavities, in pores or villosities, and these pores or

villosities absorb the fluids with which they are in contact, when the latter have been properly assimilated or digested.

These vessels seem to form alone the tissue of the white membranes. In some organs, they are so numerous, that, by crossing each other, they constitute plexus or reticulations which cover their whole surface.

The radiculæ of the capillary tubes unite to form vessels more apparent: the latter proceed into small glands, where they deposit the liquids which they contain. These liquids are there subjected to a second assimilation, a more complete digestion, and again issue by a new order of vessels, larger and less numerous.

The lymphatics from every part proceed towards the breast, traversing the glands which they meet with; the lymph continues to be assimilated in these glandulous organs, where it loses all its foreign qualities, and assumes characters of animalization which render it proper for being mixed with and forming a part of the venous blood.

It is seen by this organic disposition, that no foreign substance can be mixed with our fluids till it has undergone a sort of digestion; and we find in the anatomical structure of the human body a proof that no poison can pass into the blood, and that the theory of metastasis is erroneous.

The lymphatic vessels, in traversing the glands,
always

always unite into vessels which are larger and less numerous.

The lymphatic glands are more multiplied in parts where there is a greater quantity of liquids to be absorbed. Thus, for example, they are exceedingly numerous in the abdomen, in the thorax, and around the neck, and are few in number in the limbs.

We shall here point out the position of these glands, and describe the progress of the lymphatic vessels which traverse them.

387. All the lymphatics of the pelvian limb proceed into the glands situated in the ham, the region of the groin and the pelvis.

Two or three very small glands are situated in the hollow of the ham, around the poplitean artery; they receive the lymphatics which come from the foot and the leg: *the poplitean glands*.

The lymphatics which proceed to these glands are situated profoundly between the muscles, and accompany the arteries: some of them arise on the foot, *the super-plantar*, ascend before the tibia, following the progress of the anterior tibial artery, traverse with it the inter-osseous ligament, and proceed to the ham. Others, which are more numerous, arise on the sides of the toes, accompany the divisions of the plantar artery, pass under the calcaneum (*the plantary*), ascend with the posterior

tibial artery along the poplitean side of the leg, and advance as far as the ham. The latter accompany the peronæal artery, and unite with the preceding. They all proceed to the poplitean glands.

The lymphatics which issue from the poplitean glands are larger and less numerous than those which proceed thither: they are directed towards the inguinal region, and proceed into the glands situated in that region.

The *inguinal glands*, the number of which varies from eight to twelve, may be distinguished into *superficial* and *profound*. The former are placed between the integuments and the aponeurosis of the ilio-aponeurosi-femorian muscle: the rest are situated below that aponeurosis. The lymphatics which proceed into the *superficial glands* arise, 1st, from different parts of the abdominal member; 2d, from the exterior parts of generation; 3d, from the integuments of the abdomen.

1st. The first accompany chiefly the divisions of the tibio- and peronæo-malleolar veins; they come from the extremity of the first two toes, the *subcutaneous* or *superficial*, advance on the tibial edge of the foot, and ascend along the interior side of the leg as far as the knee, where they unite with those which come from the exterior part. The latter arise at the extremity of the last toes, advance on the peronæal edge of the foot, ascend with the peronæo-malleolar vein, along the exterior and
posterior

posterior side of the leg, as far as below the knee, where they turn forwards, unite with a part of those which pass over the fore-part of the leg, become confounded with the preceding, and ascend together along the interior side of the thigh, as far as the glands of the groin.

The lymphatics which ascend along the posterior side of the thigh turn inwards, and proceed to the inguinal glands with those which proceed from the nates: *the sub-cutaneous femoro-poplitean, sub-cutaneous of the nates.*

2d. The lymphatics of the genital parts proceed: from the præputium, passing over the penis, *the sub-cutaneous of the penis*; from the scrotum, *the scrotal*; from the great labia, *the sub-cutaneous vulvar*; from the integuments of the perinæum and the anus, *sub-cutaneous of the perinæum and of the anus*: all these proceed to the inguinal glands.

3d. The lymphatics which proceed from the anterior parts of the abdomen, *the sub-umbilical*, and from the lateral and posterior parts of the abdomen, turning round on the bone of the ilium, *circumflex of the ilium*, proceed also to the superficial glands of the groin.

The *profound inguinal glands*, which are less numerous than the superficial, are situated before the crural vessels. They receive the profound lymphatics of the foot and leg, which, after traversing the poplitean glands, ascend along the interior part
of

of the thigh, accompanying the femoral artery, the *femoro-poplitean*: the latter unite to those which return from the muscles of the posterior part of the thigh, following the course of the profound inter-muscular artery. The profound inguinal glands receive also the lymphatics which proceed from some muscles of the abdomen, and which accompany the super-pubian artery.

The lymphatics which have traversed the glands of the groin proceed afterwards into those of the abdomen.

The glands situated in the cavity of the abdomen are very numerous. They may be distinguished in the following manner: 1st, those which surround the iliac vessels, the *iliac glands*; 2d, those which are found in the cavity of the pelvis, the *pelvic glands*; 3d, those placed around the aorta and the abdominal vena cava, on the bodies of the lumbar vertebræ, the *prælumbar*; 4th, those on the mesentery, the *mesenteric*; 5th, those of the meso-colon, the *meso-colic*; 6th, those which surround the hepatic, splenic, pancreatic, and gastric vessels: *sub-hepatic, splenic, pancreatic, and gastric glands*.

1st. The *iliac glands* receive a part of the lymphatics furnished by the inguinal glands, and which penetrate into the abdomen, passing below the crural arch; they receive those which return from the interior part of the sides of the abdomen,
following

following the contour of the ilium, and some of those arising from the testicles: in the last place, they receive the greater part of those furnished by the bladder and the prostate gland: *the vesical and prostatic.*

2d. The *pelvian glands* receive the lymphatics which come from the muscles of the interior part of the thigh; these vessels accompany the sub-pubian artery, passing with it through the sub-pubian hole, and penetrating into the cavity of the pelvis

These glands receive some of the lymphatics which come from the poplitean glands, and which accompany the sciatic nerve and vessels. The latter penetrate into the pelvian cavity, passing through the sacro-ischiatic notch. They receive those which come from the muscles of the nates, those which come from the cavity of the pelvis and from the interior part of the vertebral canal, the *sacral*; some of those arising from the perinæum; the profound lymphatics of the penis, which are furnished by the glands, the urethra, and the cavernous bodies: the last ascend along the branch of the ischium, accompanying the ischio-penian vein. In the last place, the pelvian glands receive the lymphatics which proceed from the cavity of the uterus, accompanying the veins of that organ: these lymphatics, the *uterine*, are very apparent in the time of gestation.

3d. The *prælumbar glands* receive the lymphatics

tics of the iliac fossa and of the lateral parts of the loins, the *ilio-lumbar*. Those furnished by the peritonæum and some muscles of the abdomen and of the rachis, the *lumbar*; those which proceed from the tunica vaginalis, the epididymis, and ascend along the cord of the spermatic vessels. Those which return from the ovarium, the Fallopian tubes, and the super-pubian or round ligament. In the last place, they receive those which proceed from the kidneys, the super-renal capsules, and the ureters : *the renal, super-renal, ureteric*.

4th. The *mesenteric glands* are placed between the two laminæ of the mesentery, on the divisions of the mesenteric arteries. They are flat and of different sizes : they are much more voluminous in infancy, and seem to decrease with age.

These glands, which are exceedingly numerous, receive the chyloferous vessels which open at the interior surface of the small intestines, and the lymphatics which arise at the exterior surface of these intestines.

All these vessels proceed over the intestinal canal, enter between the laminæ of the mesentery, cross each other, form numerous plexus, and proceed to the mesenteric glands.

The lymphatics which issue from these glands unite afterwards into several trunks, which proceed into a common canal.

5th. The *meso-colic glands*, less numerous than
the

the preceding, are placed between the two laminæ of the meso-colon. They receive the lymphatics which proceed from the cœcum, the ascending portion of the colon and its transverse part, *the right colic*; they receive those furnished by the left portion of the colon and the rectum, *the left colic*; the lymphatics which issue from the meso-colic glands proceed to the prælumbar glands, and join the crural lymphatics.

6th. The *sub-hepatic, splenic, pancreatic, and gastric* glands are situated below the liver and the stomach, on the divisions of the aorta, the vena cava, and the sub-hepatic trunk. These glands continue with the mesenteric and the meso-colic.

The *sub-hepatic* glands receive the profound and superficial lymphatics of the liver. The *profound* lymphatics come from every point of the substance of the liver; they accompany the divisions of the vessels of that viscus, forming plexus around the sub-hepatic vein, and unite themselves to the *superficial*. The *superficial sub-hepatics* arise from the concave surface of the liver and of the gall-bladder, proceed over the hepatic and cystic vessels, and unite to those which come from the gastro-hepatic epiploon.

The lymphatics which proceed from the sub-hepatic glands pass obliquely below the duodenum, and proceed to the common reservoir.

The *splenic glands* receive the lymphatics which
come

come from the substance of the spleen and its exterior surface; they proceed towards the scissure of that viscus, and form a plexus which furrounds the splenic vessels. These lymphatics unite to some of those which come from the great epiploon, and proceed together to the *splenic glands*. These glands receive also the lymphatics which proceed from the great cul-de-sac of the stomach, and which accompany the left gastro-epiploic artery.

The lymphatics which issue from the splenic glands pass under the pancreas, receive those which return from that viscus, the *pancreatic*, after having passed through the pancreatic glands; and all unite to the sub-hepatic lymphatics, to proceed into the common canal.

The *gastric glands* receive the lymphatics of the stomach: the latter may be distinguished into superficial and profound.

The superficial arise on the exterior face of the stomach, and expand below the peritonæal tunic. The profound vessels have their origin on the interior face of the stomach, and proceed between the mucous and the muscular tunics.

These superficial and profound lymphatics proceed towards the small curvature of the stomach, unite to some of those which return from the gastro-hepatic epiploon, and proceed into the glands situated in that part of the stomach. The other lymphatics follow the great curvature of that viscus, accompany

accompany the right gastro-epiploic vein, join those furnished by the great epiploon, and unite to the sub-hepatics, to proceed into the common canal.

All the lymphatic vessels of the pelvian limb, of the sides of the abdomen, and of the viscera contained in its cavity, after proceeding to the numerous glands already mentioned, and having successively traversed them, always issuing from them in larger and less numerous rami than those which entered them, unite into a considerable plexus, which gives birth to a common lymphatic trunk: THE THORACIC CANAL.

This canal, which at its origin often exhibits a dilatation, *reservoir of the chyle* (reservoir of Péquet, lumbar cistern), passes between the pillars of the diaphragm, penetrates into the breast, ascends in the posterior mediastinum, along the right part of the bodies of the vertebræ of the back, between the aorta and the prælumbo-thoracic vein: when it reaches the height of the fifth or sixth vertebra of that region, this canal inclines to the left, passes behind the œsophagus and the sub-sternal curvature of the aorta, and re-appears towards the left side of the body of the third dorsal vertebra. It then ascends before the great trachelo-sub-occipital, is reflected inwards, and proceeds into the left sub-clavian vein, at the place where that vein unites with the cephalic.

In its passage along the breast, the thoracic canal

nal receives the lymphatics which proceed from the trunk, from the left part of the head and neck, as well as those of the thoracic limb of that side. The lymphatics which return from all these parts proceed into the glands situated, 1st, in the cavity of the thorax; 2d, in the head and neck; 3d, in the thoracic limb.

The first, according to their position, are called the inter-costal, præ-dorsal, sub-sternal, cardiae, mediastine, bronchial, and pulmonary.

The *inter-costal glands* are few in number, and placed between the intervals of the ribs; they receive the lymphatics which return from the sides of the thorax, accompanying the inter-costal veins, and those furnished by the coverings of the rachidian prolongation. The glands situated between the last ribs receive also lymphatics arising from the superior surface of the diaphragm: *the super-diaphragmatic*.

The lymphatics which issue from the inter-costal glands proceed to the *præ-dorsal glands*.

These glands are placed on the sides of the bodies of the dorsal vertebræ, near the heads of the ribs; they receive the lymphatics of the œsophagus, which form a plexus along that canal.

The lymphatics which arise from the *præ-dorsal glands* proceed directly to the thoracic canal.

The *sub-sternal glands*, placed behind the sternum,

num, *receive* the greater part of the lymphatics furnished by the convex side of the liver and the thoracic side of the diaphragm.

The *first, the super-hepatics*, form three principal branches: one, called the *median*, is formed by the union of several rami, which arise on the convexity of the liver, and unite to form a branch which proceeds along the right side of the middle ligament of that organ. This branch traverses the diaphragm, ascends along the anterior mediastinum, and proceeds to the sub-sternal glands.

The other two branches proceed towards the lateral ligaments, and unite with the sub-sternal and some of the inter-costal.

The *second, the super-diaphragmatics*, are confounded with the sub-sternal.

The lymphatics *furnished* by the sub-sternal glands accompany the veins of the same name, have frequent communications with the inter-costal and super-hepatic lymphatics, and proceed into the thoracic canal, near to its termination.

The *cardiac glands*, situated under the curvature of the aorta, receive the lymphatics which return from the pericardium and the heart. Those which return from the pericardium, *the pericardian*, arise on its interior surface, and unite with those which return from the heart. The *cardiac lymphatics* form two trunks, *one* of which accompanies the right cardiac artery, ascends before the aorta,

passes below the bronchiæ, and terminates at the summit of the thoracic canal. The *other*, which is larger, passes between the aortic and the pulmonary artery, traverses the cardiac glands, and proceeds, in like manner, to the thoracic canal.

The *mediastine glands*, situated between the laminæ of the posterior mediastinum, receive some lymphatics which come from these laminæ, the *mediastine*, and the *superficial* of the lungs. The latter proceed from the surface of the lungs, and form numerous reticulations, which give birth to branches that proceed to these glands.

The *bronchial* and *pulmonary glands* are found on the divisions of the bronchiæ, and on the lungs. They are large, blackish, and exceedingly numerous; they receive the *profound* lymphatics of the lungs. These lymphatics proceed from the substance of the lungs; they accompany the veins, traverse the bronchial glands, pass behind the posterior mediastinum, and unite in several branches. These branches proceed, on the left side, into the thoracic canal, and on the right into a lymphatic trunk, which communicates with the right sub-clavian vein: the *brachio-cephalic trunk*.

The glands of the head are distinguished, according to their position, by the names of, the mastoidian, parotidian, sub-zygomatic, maxillary, and sub-lingual.

The *mastoidian glands*, few in number, are placed
around

around the mastoid apophysis; they receive the lymphatics which proceed under the integuments of the posterior part of the head.—

The *parotidian glands*, situated around the parotid gland, receive the lymphatics furnished by the integuments of the lateral parts of the head, and accompany the temporal veins.

The lymphatics which proceed from these glands unite with those of the anterior part of the neck.

The *sub-zygomatic glands* receive the lymphatics which accompany the profound temporal arteries.

The *maxillary glands*, placed on the sides of the jaw, receive the lymphatics which proceed from the integuments of the forehead, *the frontal*. These lymphatics descend towards the large angle of the nose, receive those furnished by the eye-lids and the orbit, the *palpebral* and *orbital*, and unite to the sub-cutaneous of the face: the latter proceed from the sides of the nose, the cheeks, and the lips, accompanying the labial vein.

The lymphatics which *issue* from the maxillary glands unite with those of the region of the neck.

The *sub-lingual glands*, placed under the tongue, receive the lymphatics which proceed from the tongue, the *lingual*; from the palate, *the palatine*; from the back part of the nostrils, *the nasal*; from the orbits, *the orbital*; and from the pharynx, *the pharyngian*. All these lymphatics follow the divi-

fions of the veins, and with the preceding join those of the anterior part of the neck.

The glands of the neck are distinguished into trachelian and cervical.

The *trachelian glands*, which are very numerous, and placed beneath the skin, surround the trachelo-sub-cutaneous veins and the cephalic trunk; they receive the lymphatics which return from the glands of the head, and descend on the sides of the neck, where they form a plexus. These lymphatics unite with some of those furnished by the integuments of the face, the *sterno-costal of the thorax*, and form two or three branches, which on the left side proceed into the thoracic canal, near its termination, and on the right into the brachio-cephalic trunk.

The *cervical glands*, which are situated more profoundly, receive the *profound or inter-muscular* lymphatics of the region of the neck, which are united to some of the *dorsal* and to the *sub-scapular*.

The lymphatics which return from these glands join the *trachelian*, and on the left side proceed to the thoracic canal, and on the right to the brachio-cephalic trunk.

The *glands of the thoracic limb* are situated towards the articulation of the elbow, in the hollow of the arm-pit, around the scapula, and under the clavicle.

The *axillary glands* are very numerous; they
are

are placed in the hollow of the arm-pit, under the axillary vessels. They receive a great number of lymphatics :

1st. Those which return from the sterno-costal surface of the thorax, the mammillæ, the *mammary*, and from the muscles of that region, the *inter-muscular*.

2d. Those furnished by the integuments of the back, *cutaneous of the back*, and the muscles of that region, the *inter-muscular of the back*.

3d. Those which return from every part of the thoracic limb.

The latter may be distinguished into *superficial* and *profound*: the former follow the divisions of the veins; the latter accompany the arteries.

The *superficial* spread over the two faces of the limb, and are thus divided into *super-palmar* and *sub-palmar*.

The *super-palmar* arise from the fingers, and ascend on the back of the hand, along the exterior side of the fore-arm, where they separate: some of them proceed towards the cubital edge of the fore-arm, pass below the elbow, turn inwards, and proceed towards the bend of the arm. The rest take a direction towards the radial edge of the fore-arm, and proceed in like manner to the bend.

The *sub-palmar* lymphatics arise at the extremities of the fingers, spread over the palmar face of the hand and of the fore-arm, and join the preceding towards the bend of the articulation.

All these lymphatics ascend together along the interior side of the arm, and proceed to the axillary glands. Some of these vessels traverse one or two small glands situated at the middle part of the interior side of the arm.

The *profound* or *inter-muscular* lymphatics arise from the fingers, accompany the radial, cubital, and inter-ossæous arteries, and proceed in part to the glands situated in the bend of the arm, the *humero-cubital*, and to the *axillary glands*.

These glands receive also the lymphatics of the posterior side of the arm, the *humero-olecranian*, and those which come from the shoulder: the latter traverse some glands situated in that part.

The lymphatics which *issue* from the axillary glands pass under the clavicle, and proceed, in part, into the *sub-clavian glands*: they then unite with those which come from the head and the neck, and on the left side they all proceed into the thoracic canal, near its termination, and on the right into the brachio-cephalic trunk.

The *brachio-cephalic* trunk is formed by the union of the lymphatics which proceed from the right side of the head, from the thoracic limb of the same side, and from some lymphatics of the thorax and the liver. This trunk is very short: it is situated obliquely behind the clavicle, and proceeds into the right sub-clavian vein.

SYSTEM OF GENERATION.

388. THE system of generation consists essentially of the reservoir of the semen and ova (ovarium), and the organ which secretes the substance proper for fecundating these parts (anthera, milt, testicle.)

The ovarium, as well as the organ which secretes the fecundating matter, is accompanied by a greater or less number of accessory parts, which vary the mode of re-production in the different classes of living beings.

The ovarium is found in all vegetables and animals whose organs of generation are known.

No animal has ever more than two ovaria ; but a great number are generally found in the same plant.

In animals, the ovarium is almost always placed in the abdomen* : in plants it generally supports a hollow style : this style terminates in a dilatation, (*stigma*) moist, and often unctuous, on which the farina or fecundating dust is deposited.

Osseous fishes and the mollusca cephalopoda have only two bunches of eggs, which they can instantaneously deposit.

* In *muscles* the eggs are found between the folds of the branchiæ,

Insects have several oviducts, and several strings of eggs; but the very complex organization of these animals is as yet little known.

Birds have only one ovary, and an oviduct which proceeds into the *cloaca*.

In reptiles there are two ovaries and two oviducts*.

Two ovaries and two oviducts, which proceed into a sort of uterus, are found in cartilaginous fishes, such as the ray and the shark†.

In a word, all the females of the mammalia have two ovaries and two oviducts (*tubes*), an uterus, and a vaginal conduit.

The considerable number of eggs or seeds contained in some ovaries exhibits an example of extreme fecundity. The eggs contained in the ovaries of certain fishes, such as the gadi (cod, whiting, &c.), have been estimated at more than nine millions. Some vegetables also afford instances of extraordinary fecundity: 32,000 seeds have been counted in the poppy, and more than 40,000 in a tobacco plant.

The number of germs contained in the ovaries

* In the frog and snails the ovaries form two large bunches, kept together by a slimy matter; and the oviducts are long and twisted, and form a great many circumbulations.

† The oviduct of these animals exhibits a whitish glandulous body, the aperture of which contracts, and makes the eggs assume a square form.

of warm-blooded animals does not appear to be so considerable; and it seems that the facility of reproduction decreases according as the organs of generation become more complex.

Each seed and each egg contains a germ*, and the nourishing organs destined to provide for its first expansion. The seeds are contained in a triple covering, inclosed for the most part in a pericarpium of a different nature†.

The ova in osseous fishes are covered by a thin pellicle; in cartilaginous fishes they have a brown or gold coloured covering, coriaceous and fibrous; in birds, serpents, and tortoises, they are covered by a cretaceous covering, of greater or less thickness: this calcareous covering is formed in the *cloaca* by the deposit left by the urine.

In the mammalia, the ovarium has the appearance of a glandulous body, which contains round tubercles: it is covered by a membrane of a compact tissue. In these animals the summit of the tube, shaped like the wide end of a trumpet, is opposite to the ovarium; the body of it is very narrow, and it proceeds obliquely into the uterus. In ruminating animals the tube, which is broad at the base, is confounded with the matrix,

* There are two or more in the seed of the *pincimbra*; the *citrus aurantium*, the *ernimus europeus*, &c.

† Capsules, pods, husks, shells, apples, berries, nuts, &c.

and makes it appear as if divided : the foetus is in part developed in the tube.

The parietes of the uterus are very thick, and of a fibrous tissue exceedingly compact. This organ has a transverse aperture, which corresponds to the bottom of the vagina.

In the didelphis, the uterus, which is very small, exhibits, behind and on the sides, two apertures corresponding to two bifurcations of the vagina : it is by these means that fecundation is effected. The anterior part of the uterus has an aperture, in general imperceptible, through which the embryo always proceeds, at an early period, to pass into a membranous bag, where the mammellæ are situated.

The vaginal conduit is membranous, full of folds, and covered by a thick mucous tunic furnished with glands. It exhibits before, and at the top, the entrance of the *meatus urinarius*, on the sides of which are two membranous folds (*the nymphæ*). Before the *meatus urinarius* is the *clitoris*, the size of which varies ; in apes it is very long, in the elephant it is nearly a foot in length, and in the castor and water rat projects outwards.

At the entrance of the vaginal conduit the skin forms several large folds : in woman, this entrance (*vulva*) is partly closed beyond the *meatus urinarius* by a membrane (*the hymen*) which has not been observed in the other mammalia.

The

The orifice of the vulva is at a greater or less distance from the anus: in the elephant it approaches very near to the navel.

In animals without vertebræ, the exterior orifice of the genitals often exhibits a very singular position: in the aplysiæ it is found on the right side of the body; in the slug, and snails with a shell, it is under the right tentaculum; in the crustacea, at the thigh of the claw before the last; in the field spider, under the mouth; in leeches, towards the anterior and lateral third of the body, &c.

389. The system of generation in the male consists essentially in the organ which produces the fecundating dust or liquor: *the anthera, milt, or testicle.*

This organ is found in all living beings whose mode of generation is known.

The number of the antheræ is exceedingly various; in fishes there is only one milt; most of the other animals have two testicles.

In insects the genitals of the male are exceedingly complex; they exhibit several parts, which seem to correspond to the testicles, to the epididymis, the seminal vessels, and the *vasa deferentia*: they have also a single or double penis, membranous, erective, and of different forms. This penis has frequently on the sides an apparatus like two scales, which separate to open the vulva.

It is so difficult to observe properly the organ of generation in these small animals, that it is still little known : we are only assured that it is very complex.

In vertebral animals, the milt or testicles are primitively situated in the neighbourhood of the kidneys ; they consist of an assemblage of long capillary vessels, rolled over each other, and along which the fecundating liquor is secreted. These organs are enveloped by a particular tunic (*tunica albuginea*). They have always above them another smaller body (*the epididymis*), formed by a collection of coarser vessels, through which the liquor passes in its way from the testicle.

The epididymis is then continued by a *vas deferens*.

These in general are nearly the whole of the organs of generation in fishes, reptiles, and birds : their testicles vary in size, and in the season of copulation assume a considerable increase of size.

They remain nearly of the same size in most of the mammalia, and particularly in those which copulate at all seasons. In the rodentia they are renewed.

During the long sleep of animals subject to a state of torpor in the winter season, the testicles become much larger, while the rest of the body grows thin ; so that when they awake they find themselves strongly excited to the act of reproduction.

In

In a part of the mammalia, these organs remain in the abdomen; in others they descend through the inguinal ring, and carry with them a portion of the peritonæum by which they were covered, and which then forms to them a second tunic, *the peritonæal* (the elytroid).

The testicles when they descend beyond the abdomen are received in a common covering, formed by a fold of the skin (*the scrotum*). Each of them is covered also by a third membrano-musculous wrapper (*the dartos*), and supported by a muscle (*the cremaster*).

The aperture of the inguinal ring, which in man is generally shut, remains open in the other animals with a bag, and the testicles by the contraction of the dartos can enter the abdomen.

Animals which keep their testicles in the abdomen, such as the rodentia, moles, shrew-mice, &c. are endowed with the genital function in a high degree.

In some birds, such as the ostrich and the greater part of the palmipeda; in fishes with fixed branchiæ, such as the ray and the squali; in several reptiles, and in serpents, the vas deferens is continued with an erectile tubercle, which is often bifid, and forms a sort of penis. In birds this penis has on it a furrow.

The penis does not really exist but in the mammalia: in these animals the vasa deferentia are prolonged

prolonged as far as the canal of the urethra, and continue with it.

In most of the mammalia, the vasa deferentia have a communication, in their passage, with two short canals, which proceed into two kinds of vesicles (*the seminal*) situated at the bottom of the bladder.

The seminal liquor seems to flow back into these vesicles, and to remain there as the bile does in the gall-bladder.

In carnivorous animals the seminal vessels are wanting; in the greater part of the ruminantia they are small, and in apes large; in the rodentia they are of considerable extent, and particularly in the hedgehog, which has them divided into several lobes.

The ardor for the venereal act seems to be in the ratio of the size of the testicles.

At the root of the penis in the mammalia is a gland (*the prostate*), which varies in its form and size. This gland pours the product of its secretion into the urethra, which is close to the aperture of the ejaculatory conduits.

The canal of the urethra is enveloped, on the sides, by two bodies of a compact and spongy texture (*the cavernous bodies*), in which the blood accumulates to produce erection.

The cellular tissue of the cavernous bodies seems to ossify with time in several of the carnivorous animals, such as the dog, wolf, fox, &c.
which

which renders the canal of the urethra sometimes osseous.

The penis receives several muscles which are affixed to the pelvis: those called the *erectors* do not serve for that use which the name seems to indicate.

The glans, or termination of the penis, in the different animals, is susceptible of a sort of erection, and exhibits a great variety of forms: in apes it is pointed, and cut into the form of a fleur-de-lys or mushroom; in the ruminating animals it is very slender; and in the rhinoceros it is shaped like a double bell-flower: in the didelphis it is forked, &c. The penis of dogs has a projection before, which is stopped in the vagina by a roll; and in consequence of this conformation these animals remain coupled together after coition as long as the erection continues.

The surface of the glans is generally smooth; but in the genus of the cat, and in serpents, it is covered with strong asperities*.

In bats, apes, and man, the penis remains suspended without; it is enveloped, as far as the root of the glans, by the skin, which in that place forms a fold (*the præputium*) proper for covering the latter part: the præputium of man is retained at the root of the glans by a frænum.

* This structure is in all probability the cause of those cries which the cat emits during coition.

In the other mammalia, the penis disappears by means of particular muscles, and remains habitually in a membranous sheath fixed to the abdomen.

The exterior organs of generation in the males are for the most part placed in the same parts as in the females; but in insects they are sometimes at a considerable distance from each other, which renders necessary a very singular mode of copulation: thus, in spiders, the organs of the male are in the feelers, and those of the female are at the bottom of the abdomen.

390. The germs seem to be fecundated by the contact of the prolific substance of the male organ.

In spinous fishes, the germs are fecundated after they have been deposited by the female: in other animals, as well as in plants, their fecundation is effected in the ovarium.

The germs are always united to a peculiar vascular organ (*cotyledon*, *placenta*, &c.) destined to assimilate the materials of nutrition, and to distribute them to the new being until it has acquired a certain state of strength.

In vegetables, this apparatus derives its nutritive substance, in a great measure, from without.

In all animals, the mammalia excepted, the germs and nutritive apparatus are inclosed in the ovum, along with the materials of nutrition necessary for the first increase. The ova may then be hatched

hatched either without or within the body of the mother, until the embryo has acquired sufficient strength to burst its covering, and to enjoy a new existence (*oviparous.*)

In the mammalia the germ remains fixed to the mother by the apparatus of nutrition, which continues to supply the nourishing fluids, necessary for the development of the germ and of its placenta; and at a fixed period she deposits them. The new being then remains attached to the mother by the new care of lactation which she bestows on it (*viviparous.*)

391. In vegetables, when fecundation is effected, the essential and accessory parts which concurred towards this end become desiccated and drop off.

The germ at first appears as a small viscous body, enveloped in a thin pellicle, containing a mucilaginous liquid in which it floats. This apparatus increases after fecundation, and successively expands the other parts which constitute the seed.

In the ripe seed, the germ is generally a small oblong body, placed in general near the centre. The extremity of the germ, nearest to the surface of the seed, is terminated by a small tubercle, which becomes the radicle; the extremity which corresponds nearly with the centre of the seed terminates in a point, and becomes the plumula.

The germs are accompanied by one or two cotyledons, with which they are closely united.

When there is only one cotyledon, it seems to be a prolongation of the germ. When there are two, they envelop the germ, and are united by filaments which proceed near to the radicle of that embryo.

The cotyledons expand into lobes, or give birth to feminal leaves.

The germ and cotyledons are surrounded by a substance which does not adhere to these parts, and which is called the *perisperma*. The *perisperma* is either farinaceous, as in the gramineous plants, or corneous, as in coffee, or even ligneous, as in the umbelliferous.

In some seeds, a small body called the *vitellus* is observed between the *perisperma* and the cotyledons.

All these parts of the seed are inclosed in a triple covering, the laminae of which have been distinguished by the names of *epidermis*, *arillus*, and *testa*. This covering is interrupted only by a small tubercle, by means of which the seed is continued with the plant. After the seed is ripe, and when it has detached itself, a small depression called the *umbilicus* remains in the place where the tubercle was inserted. The seed is always supported or surrounded by a receptacle called the *placenta*; and in both these cases it is either naked or supported by the *calyx* which has remained, or is enclosed in a covering called the *pericarpium*.

The form and consistence of the *pericarpia* are various: their varieties are distinguished by the names

names of capsule, pod, husk, shell, apple, berry, nut, &c. they constitute the fruit.

392. The nutritive apparatus of the germ of birds (of the chicken for example) consists essentially in the membrane of the yolk, which is continued with the intestines of the embryo.

The embryo is inclosed in a membrane (the *amnios*), which secretes a liquid in which it floats: this membrane adheres to that of the yolk.

The membrane of the yolk is a covering of a very fine texture, and contains an oily and albuminous liquor. This membrane is continued with the first intestines, and supports the arteries which it receives from the embryo, and the veins which it sends to it.

When the germ is fecundated, and a circulation is established between the vessels of the embryo and those of the membrane of the yolk, it is observed that this membrane insensibly absorbs the albuminous liquid (the white) of the egg, which passes through the yolk. This membrane then absorbs the yellow liquid itself; it assimilates these materials, and transmits them to the embryo to promote its first expansion.

In this mode of development, the apparatus of the egg decreases in volume, according as the young animal increases in size.

Though the development of the egg in reptiles and white blooded animals has not been observed with the same care as in the domestic fowl, every thing seems to announce that it is effected, in general, in a similar manner.

393. The nutritive apparatus of the foetus, in the mammalia, consists; 1st, in a sort of cake (*placenta*), or in a greater or less number of lobes* (*cotyledons*) of a vascular and parenchymatous texture, thick and compact; 2d, in a double membrane, which envelops the foetus, and adheres to the placenta or to the cotyledons; 3d, in several orders of vessels, which extend from the foetus to the placenta, forming a cord.

The placenta or the cotyledons adhere by one of their surfaces to a part of the sides of the uterus, without any continuity of the vessels being established †.

The placenta is every where fixed; and when the egg remains in the ovarium, or in the tube, or when it proceeds to the abdomen, the placenta still adheres to all these parts, and derives juices from them for its increase.

The membrane which envelops the foetus ex-

* The number of which amounts sometimes to nearly fifty.

† The finest injections have never been able to pass from the uterus to the placenta, nor from the placenta to the uterus.

ternally (the *chorion*) is the thickest; it adheres to the placenta or to the cotyledons, throughout a part of its extent.

The interior membrane, which is thinner (the *amnios*), adheres to the former by a loose cellular tissue; it secretes and contains the water in which the foetus is immersed.

Between the chorion and the amnios is another membrane, in the form of an elongated tube (the *allantoid*). This membranous canal is continued with a vessel (the *urachus*) which traverses the umbilical cord, and proceeds into the bottom of the urinary bladder. The urine of the foetus flows along the urachus, and is deposited in the allantoid.

This urinary apparatus, which is very striking in the solipeda and the ruminantia, exists only in rudiments, and seems to be of no use in several other quadrupeds, and in man.

The umbilical cord is composed of sanguiferous vessels, the urachus, nerves, and the membrane which forms a covering to these parts.

The blood of the foetus is distributed to the placenta by two arteries (the umbilical), which are the two principal divisions of the iliac. The blood returns from the placenta by a large vein (umbilical), which when it reaches the foetus proceeds to the liver, and divides into two branches:

one of these is distributed in the liver, and the other proceeds to the vena cava.

The vein, for the most part, is twisted round in a spiral form on the arteries.

394. In the human species, the same apparatus of reproduction is found as that which is observed in the greater part of the mammalia.

The testicles, which are nearly of the shape and size of a pigeon's egg, are two in number; they are situated without the abdomen, and below the pubis, in a fold of the skin called the *scrotum*.

The skin of this part, which in adults is wrinkled and covered with hair, has in the middle a median line (*raphe*), which seems to be a scar, and which extends from the root of the penis as far as the anus.

Beneath the skin, is found a membrane of a close cellular tissue, in the midst of which are a few very thin and very pale carneous fibres, the *dartos*. This sub-cutaneous muscle forms a covering for each testicle, and corrugates the skin of the scrotum.

This muscle covers the very thin, reddish expansion (*elytroid*) which sends out another particular muscle (*cremaster*).

Below these parts is a membrane of a compact tissue, in the form a tunic, the *peritoneal* (*elytroid*

or

or vaginal). This membrane adheres without to the neighbouring parts by a lax cellular tissue: its interior surface is smooth; it secretes a serous matter, and covers the testicle without adhering to it.

In the last place, the proper substance of the testicle is enveloped by a white membrane (*tunica albuginea*) of a thick and compact tissue. This membrane is smooth and serous on the outside; and gives birth interiorly to a very great number of fibres or laminæ, which intersect each other in the whole substance of the testicle.

The proper substance of the testicle exhibits nothing but a vascular reticulation, exceedingly fine, and of a grayish colour. This reticulation seems to spin itself out into a capillary conduit of great fineness and length, and to be formed only of several vessels of the utmost tenuity, folded back on themselves: *the seminiferous conduits*.

These conduits terminate at a whitish, compact, oblong body (of Highmore) adhering to the tunica albuginea, and which is found at the summit of the testicle behind. This body seems to be formed by the union of the laminæ sent out by the interior surface of the tunica albuginea. It is pierced with several small apertures, at which the seminiferous conduits seem to terminate.

This whitish body establishes a communication between the testicle and another oblong grayish

body, which runs along the posterior edge of the testicle (the *epididymis*), and which forms nearly the fourth of its volume.

The epididymis exhibits a vascular tissue, similar to that of the testicle: it is formed of one exceedingly fine conduit (much less so however than the preceding) of about fifteen or eighteen feet in length, folded back on itself: it receives the sperm which comes from the testicle, traversing the whitish body.

The epididymis is continued downwards and backwards with a conduit (*vas deferens*) larger than the preceding. This conduit is thick, whitish, solid, and, as it were, cartilaginous: it ascends on the side of the epididymis, and proceeds towards the inguinal ring, accompanying the vessels of the testicle; it then separates from them, is reflected into the pelvis, passes over the sides of the bladder, and advances towards the bottom of that organ to join itself to its fellow, at a very acute angle.

In that place, the *vasa deferentia* exhibit, on their exterior sides, an aperture which communicates into a blind membranous canal about four fingers breadth in length. This canal (*seminal vesicle*), which is at first narrow, becomes afterwards broader, and at the bottom its width is equal to about a finger's breadth. It is of a whitish gray colour, folded back on itself, and inclosed in a cellular tissue which wrinkles it, gives it a knotty aspect,

pect, and fixes it a little behind and on the sides of the bottom of the bladder. The interior surface of this vesicle is mucous; it exhibits a great number of cells, or cul-de-sacs, formed in its substance.

The sperm, after passing through the *vasa deferentia*, flows into the seminal vesicle, where it remains. In ejaculation, it issues from that reservoir and passes into two conduits (*ejaculatory*) which are narrower than the *vasa deferentia*, of which they are a continuation. These conduits ascend from without inwards, before the bladder, traverse a large gland (the *prostate*), open obliquely at the entrance of the canal of the urethra, by two apertures which are directed forwards, and are situated on the sides of a small fold or longitudinal ridge: *the urethral ridge*.

In the foetus, the testicles are situated in the abdomen, below the kidneys; they are fixed, and covered by a fold of the peritonæum.

Towards the end of pregnancy, the testicle in the foetus proceeds towards the ring, descends into the scrotum, and carries with it a portion of the peritonæum, which serves it as a covering (*peritonæal*).

The testicle receives an artery which comes directly from the aorta, and very fine nerves: it sends out two tortuous veins, lymphatic vessels, and *vasa deferentia*.

This assemblage of parts forms a *cord* (of the
testicular

testicular vessels), which during the first years of life seems to be covered by the prolongation of the peritonæum, carried with it by the testicle, and there remains towards the ring an aperture which communicates with the abdomen : but this aperture is soon closed up ; the peritonæal covering disappears in this place, and the cord is surrounded only by the cellular tissue. This cord is still covered by a thin muscle, which seems to arise from some fibres of the lumbo-abdominian. This muscle traverses the ring, envelops the cord of the testicular vessels, and loses itself on the peritonæal tunic. It can shorten the cord, and *suspend* the testicle (the *cremaster*).

The prostate gland is below the neck of the bladder. Inferiorly, it envelops the root of the penis. This gland, the width of which is about two or three fingers breadth, seems to be formed of a compact granulated tissue ; it secretes a viscous whitish liquor, which is poured through five or six small holes into the canal of the urethra, near the aperture of the ejaculatory conduits.

395. The penis is essentially formed by two thick spongy (*cavernous*) *bodies* which separate behind, and are attached by two thin portions towards the ischio-pubian region of the pelvis. These two portions approach each other, become confounded and form only one part, which is continued

nued along the penis, and terminates at the root of the glans.

The cavernous body is composed of a cellular or areolar tissue, enveloped by a thick membrane. The cells can be filled with blood; and when this liquid is retained there in large quantity, the cavernous body swells up, becomes hard, and produces erection.

The cavernous bodies, which cover the canal of the urethra, are enveloped behind by two muscles which are attached within the tuberosity of the ischium, and advance on the roots of that body as far as the middle of it. These muscles tend to move the penis downwards: *the ischio-cavernous*.

The canal of the urethra, which extends from the aperture of the bladder to the extremity of the penis, has the form of an *f*; it is broad behind, becomes narrow in the middle, and again widens towards the place which corresponds to the glans penis: *the fossa navicularis*.

The sides of this canal are thick and of a compact texture behind, in the part which corresponds to the prostate gland; further forwards they are contracted, and for about two finger-breadths become thin and membranous; in the rest of its extent this canal is spongy, like the cavernous bodies, and appears, like it, to contribute towards erection. The spongy tissue begins by a sort of dilatation, *bulbous part*; it becomes wide before, and forms
the

the glans, which is covered with glandulous follicles.

The bulb of the urethra is covered, inferiorly and behind, by a broad thin muscle, which extends from the sphincter of the anus as far the root of the penis; it compresses and contracts the portion of the urethra on which it is applied, and may thus accelerate the course of the urine and the semen : *the bulbo-cavernous*.

Behind this muscle, and on the sides, there are two smaller ones situated in a transverse direction, the *ischio-perinæan* (transverse of the perinæum); they are fixed to the interior face of the branch of the ischium, and expand behind the bulbo-cavernous. These muscles can dilate the bottom of the canal of the urethra.

The interior surface of this canal is lined with a mucous, reddish, plaited membrane, which exhibits glandulous follicles, and several small apertures.

The penis receives a great many nerves and arteries; the blood returns by a large vein which proceeds over the back of that part.

The skin of the penis is thin, and is united to it by a lax cellular tissue, which is not adipose. When it reaches the glans, it is folded back on itself, and produces an expansion, the *præputium*, which covers that part and adheres to it inferiorly by a *frænum*. The skin which covers the glans is furnished

nished interiorly with a great number of sebaceous glands.

396. The semen which is found in the vasa deferentia and the vesicles is ferous and of a yellowish colour: it has not been analysed in this state. At the time of ejaculation, it mixes with the product of the prostate gland, which is white and viscid.

The mixture of these two liquors, expelled by ejaculation, has been carefully analysed by C. Vauquelin: it is whitish, viscous, and heavier than water: it emits an odour like that of the flowers of the chesnut tree, and that emitted when bones are sawn; it has a saline and alkaline flavour; it becomes fluid in the air, and covered with a pellicle, and deposits regular and transparent crystals of phosphate of lime. It is insoluble in water, but dissolves in weak acids and in alkalies: it turns acid by exposure to the air.

A hundred parts of semen, according to Vauquelin's analysis, gave:

Water	90
Animal mucilage	6
Phosphate of lime	3
Soda	1

Microscopic examination has discovered in the human semen an innumerable quantity of oblong animalcula,

animalcula, which were observed by *Buffon*, *Needham*, *Spallanzani*, &c.

397. The female parts of generation exhibit exteriorly a fissure, *vulva*, which extends from the pubis to within an inch of the anus.

The pubis, in that part, at the age of puberty, is covered with hair, and exhibits a prominence of a dense, adipose, cellular tissue.

On the sides of the vulva, the skin forms two folds, *the large labia*, which are exceedingly strong, covered on the outside by hair, and united at their two extremities, *commiffuræ*.

The posterior commiffura exhibits a sort of frænum, *fork*.

Below the anterior commiffura is observed a round longish tubercle (*clitoris*), formed by the union of two bodies of a compact areolar tissue, analogous to the cavernous bodies of the male, and fufceptible of a sort of erection.

These cavernous bodies extend upwards, feparate; and form two thin prolongations, which are fixed behind to the ifchium and the pubis. They are each covered by a muscle analogous to the ifchio-cavernous of the male.

The clitoris is furrounded by a fold of the skin which adheres, at the bottom, by a sort of frænum, and is free in the reft of its extent.

Anatomifts

Anatomists have had some reasons for comparing this part to the penis of the male; it is the principal seat of the pleasure experienced during the act of coition.

The clitoris is proportionably longer in newborn children, in whom it often projects beyond the large labia. In some females it exhibits a very considerable prolongation: the extraordinary length of the clitoris, added to other peculiarities in the organs of generation, has given rise to the pretended tales respecting hermaphrodites.

Within the large labia there are two other folds of the skin, less extensive than the former, called *the lesser labia* or *nymphæ*.

Below the nymphæ and the clitoris is the aperture of the canal of the urethra (*meatus urinarius*), about two fingers' breadth in length, very broad and horizontal.

The large and lesser labia open during parturition; become effaced, and increase the enlargement of the vulva.

398. The vulva forms the entrance of a conduit which proceeds to the uterus: *the vulvo-uterine* (vagina).

The vaginal conduit, which is about five inches in length and one in breadth, is in part closed towards its entrance by a thin membrane (*the hymen*), of a circular form or shaped like a crescent, which
towards

towards its lower part is furnished with an ovoid aperture more or less narrow.

This membrane seems constantly to exist; but it may be broken or destroyed by a great many particular circumstances, especially at an early age, at which period it is very thin. When entire, it is a sign of virginity; but even when wanting, it is difficult to determine whether it has been broken by the introduction of a penis or by any other cause.

When this membrane has been torn, there are found in its place from three to five spongy, reddish, unequal tubercles, which are considered as the tumefied remains of it: *carunculæ myrtiformes*.

The vulvo-uterine conduit proceeds obliquely upwards, under the arch of the pubis, into the excavation of the lesser pelvis; enters the canal of the urethra and the bladder before, and the rectum behind.

The substance of this canal is formed in a great measure by a thick lax cellular tissue; it is lined with a plaited, mucous membrane, on which is found a great number of peculiar small glands. Of these glands two are of a larger size, and their apertures, *lacunæ*, are situated near to the vulva.

Under the mucous membrane of the inferior part of the vaginal conduit, near its entrance, is found a *cavernous body* (plexus retiformis), an inch in breadth, which embraces that part during co-
ition.

ition. This plexus becomes filled with blood during coition, and opposes more resistance; it is covered by two muscles (*constrictors*) which descend from the sides of the clitoris, embrace laterally the sides of the vagina, and are confounded behind with the transverse muscles and the cutaneous sphincter. They tend to contract the capacity of that conduit: their action in some women is very striking.

399. The uterus is situated in the lesser pelvis, between the rectum and the bladder; it proceeds somewhat obliquely to the right, but its position varies at the different periods of pregnancy.

This organ is somewhat flattened from before backwards, and affects a triangular form; it is covered by the peritonæum, which is reflected before on the bladder, and behind on the rectum, forming some small folds: *anterior and posterior ligaments*.

The uterus is retained on the sides by a broad fold of the peritonæum, which adheres to the sides of the pelvis: *the broad ligament*. This fold exhibits before a *round ligament*, which from the superior angle of the uterus descends obliquely before and below the uterine tubes: it then ascends, passes through the ring, and distributes itself in the form of a goose's foot in the integuments of the groin.

The neck of the uterus exhibits a sort of dilatation flattened from before backwards; it is surrounded by the bottom of the vaginal conduit, in

the inside of which it forms a projection. The edges of its transverse aperture (*os tincae*), naturally united, are covered, in women who have had children, with furrows and tubercles.

The cavity of the neck of the matrix exhibits folds along and across the orifice of some glands, and often small round and glandulous bodies.

The cavity of the body of the matrix is of a triangular form: the sides of this organ, which are habitually contiguous, exhibit the apertures of the uterine sinuses, and those of some glands: at the lateral angles of this cavity are found the two very narrow orifices of the uterine tubes.

The sides of the uterus are exceedingly thick, and of a compact, contractile tissue: the thickness of this organ is increased during pregnancy, and the venous sinuses become then very apparent.

The uterus is lined with a mucous membrane, which is continued with that of the vagina.

The uterine tubes form two tortuous canals in the anterior folds of the broad ligament: they are exceedingly narrow towards the uterus, become wide in proportion as they recede from it, and terminate in a broad fringed aperture which floats in the abdomen, and adheres to the ovarium by one of its fringes.

The tubes are of a very compact tissue, and are lined with a mucous membrane. The cavity of them

them affords a possibility of penetrating into the abdomen without injuring the parts.

400. The ovaria, which are of an oval form, are situated behind the tubes, in the posterior fold of the broad ligament. They are of a close, compact tissue, which gives them a glandulous appearance, and near their surface they contain vesicles of different sizes, in which is found an albuminous fluid.

The ovaria are enveloped by a peculiar tunic, covered by a duplicature of the peritonæum; they are fixed to a portion of the broad aperture of the uterine tube.

At the moment of fecundation the cavity of the tube is applied to the ovarium; one of the vesicles of that organ swells up and bursts, and there issues from it an albuminous substance, which enters the tube and descends slowly into the uterus: this is the embryo with its coverings and placenta.

401. The placenta, which is flat and of a circular form, exhibits a vascular and parenchymatous tissue of a flabby consistence: one of its surfaces adheres to the matrix by means of a loose cellular tissue.

The surface of the placenta, which corresponds to the uterus, is unequal, and interspersed with tubercles and anfractuosities: these anfractuosities

can correspond with the uterine sinuses, so as to form cavities common to these two organs, from which the placenta receives the blood it furnishes to the foetus.

The free side of the placenta is covered by the chorion ; it exhibits a plexus of arterial and venous vessels, which proceeds to the child in the form of a cord.

The foetus is enveloped in a double membrane : the first, called the *chorion*, is applied to one side of the placenta ; its exterior surface is covered by a sort of down, and its interior adheres to the *amnios* by a loose cellular tissue.

The amnios, thin and transparent, contains the liquor in which the foetus is immersed ; this membrane with the preceding forms a prolongation which envelops the umbilical vessels.

The liquor of the amnios contains albumen and soda, muriate of soda, phosphate of lime, an alkaline matter, and perhaps a little acid : these substances constitute eleven or twelve hundredth parts of this liquor.

The sebaceous matter, which is sometimes deposited in very large quantity on the foetus, appears to be a mixture of animal mucilage and fat matter ; it has an analogy with animal substances converted into fat *.

* See Buniva and Vauquelin, *Journal de Physique*, Vendém. an ix.

The cord is formed by a vein and two arteries, united by means of a viscous cellular tissue, and by a ligament produced by the *urachus*.

The vein which brings the blood from the placenta proceeds to the liver, where it separates into two branches, one of which loses itself in that organ, and the other proceeds into the vena cava.

The umbilical arteries are the two principal branches of the pelvi-crural; they bring back the blood from the foetus to the placenta.

After the foetus has acquired a certain expansion, and when the placenta has attained to a sort of maturity, the uterus contracts, and expels the whole. At that period the child still remains attached to the mother by the need it has of lactation.

402. In the female the breasts are formed of a gland divided into several lobes, and enveloped by a fat substance, more or less firm and abundant. They begin to be expanded a little before the period of menstruation. This period varies in different climates; but, in general, it takes place sooner in warm than in cold climates; in large cities than in the country. The development of the breasts seems to be determined by the action of the uterus.

The breasts swell up or become prominent in the time of pregnancy, during menstruation, and during all affections of the uterus.

Their size is subject to great variation in different individuals, and even in different climates : in old age they become flaccid and hang more down, according as they have been more voluminous, according as the individual grows thinner, and as they have been longer used for lactation, &c.

The mammillary glands give birth to a great number of excretory vessels, which unite into about fifteen exceedingly flexuous canals, which open at different points of the nipple.

The nipple, which projects more or less, is of a rose-colour in young females, and in women who have had children generally assumes a brownish tint. It is surrounded by an areola of the same colour, on which are found glandulous follicles, that secrete an unctuous humour.

403. The milk is composed of three principal substances : the butyraceous matter, the caseous matter, and the serum. Milk contains also muriates of potash and of soda ; phosphates of potash and of soda ; but these salts being in small quantity and variable, are not essential to the formation of that liquor.

To analyse milk, expose it to the air for one, two, or three days, according to the degree of the temperature of the atmosphere : the cream, which arises on its surface, must be removed by means of a spoon ; and below it will be found the caseous
2 part,

part, floating in the whey or serum : these two substances are to be separated by filtration.

The serum consists of water, holding in solution sugar, an acid (*the lactic*), a little calcareous matter, and the different salts which, as already said, exist in milk. The caseous part deposits itself by evaporation, and the sugar of milk crystallizes : this sugar may be purified by a second and third crystallization.

The cream when oxygenated forms butter. The caseous matter, when fermented, forms cheese : during this fermentation there is produced a large quantity of ammonia, which is disengaged, and which becomes insupportable when cheese is put into an alkali. It is probable that there is formed also, during this fermentation, an acid which fixes the ammonia as it is produced, and there is reason to think that this acid is the acetous, or that of vinegar.

GENERAL DISPOSITION OF THE ANATOMICAL STRUCTURE.

404. THE structure of the different systems of organs in man is not essentially different from the structure of those of animals, and especially of those which compose the class of the mammalia.

The bones, the muscles, the vessels, the nerves, the organs of secretion, and those of the different senses, seem to be exactly the same, a few differences in regard to form, size and position excepted.

All these organs, in the last result, seem to be merely a tissue of vessels and nerves differently arranged, in the interstices of which are deposited albuminous, gelatinous, adipose, saline, &c. substances, which give them solidity, and form the parenchyma.

These different tissues, though their intimate structure be unknown, form several anatomical systems of organs, which ought to be carefully distinguished, because they exhibit analogous functions and diseases.

These different anatomical systems of organs are in particular : the bones, the muscles, the vessels, the nerves, the fibrous, the mucous, and the serous

ferous membranes, the glandular organs, the cellular tissue, and the skin.

The bones are formed of a tissue of vessels, in which are secreted and deposited the phosphate and carbonate of lime, that give them solidity. The life of the bones is maintained by the circulation established between the vessels of the periosteum, those of the bodies of the bones, and those of the medullary tissue.

The muscles are composed of bundles of fibres : each fibre seems to be formed of several other smaller fibres, separated and enveloped by cellular tissue ; and this sub-division of the fibres into smaller ones, also separated and enveloped by cellular tissue, is indefinitely continued. The arrangement of the muscles in long contractile fibres renders them very proper for performing great motions.

The arteries, composed of a thick and compact tissue, distribute the blood to every part of the body. They are divided and sub-divided indefinitely ; and our eyes, aided by the best instruments, are incapable of following them so far as to be able to discover in what manner they terminate in the different organs.

The veins and the lymphatic vessels are of a looser tissue, and their sides are not so thick. It is as difficult to discover the origin of these vessels as to observe the termination of the arteries.

The

The nerves are whitish cords formed of fibres in bundles ; each fibre is composed of a soft pulpy part, enveloped by a membranous sheath. The soft and pulpy part of the nerve arises immediately from the substance of the cerebrum, of which it seems to be a continuation : it is covered from its origin with the membranous sheath or vagina, and never quits it but at the termination of the nerve in the organ where it expands.

The fibrous membranes of a white and compact tissue form a covering around the bones : they compose the ligaments and articular capsules, the tendinous and the aponeurotic part of the muscles, and are observed also around some other parts.

The mucous membranes are those which line the pneumo-gastric and the genito-urinary passages ; the surface of them is covered with glandulous follicles which give it a velvety appearance. These membranes secrete a humour always viscid, the nature of which, however, is different in the different parts.

The serous membranes compose the exterior part of most of the organs, the interior part of which consists of mucous membranes ; and, in general, they cover all the surfaces of parts which are only contiguous and subject to reciprocal friction ; such as the inside of the articular capsules, of the tendinous vaginae, of the pleura, &c. They continually secrete a serous matter, by which these surfaces are lubricated.

The glandular organs comprehend, 1st, the lymphatic glands destined for assimilating the ferrous liquids before they are mixed with the blood; 2d, the viscera set apart for some particular secretions, such as the kidneys, the liver, &c. The organic structure of these various parts is different.

The cellular tissue, of a loose nature, is distributed around all the organs, and serves to unite them; it secretes and retains in its areolæ that adipose substance which constitutes fatness.

The skin is composed of a vascular, thick, and whitish substance, which forms the *dermis*, or skin properly so called; it is lined by the mucous body which gives the skin its colour, and the whole is covered by imbricated laminæ, dry, and in some measure inorganized, which form the *epidermis*. The skin contains also in its substance small glands, and the bulbs of the hair.

405. All these systems of organs discharge their particular functions by the influence of the nerves which are distributed to them. The nerves they receive may come from the encephalon, the vertebral prolongation, or from the ganglions of the tri-splanchnic, and thus give them different modes of sensibility..

The systems of the functions exhibit phænomena varied in proportion to the greater or less number of the anatomical systems of organs which enter

into their composition, and which each carry thither, as we may say, a particular kind of life. Thus, in the system of vision, when the action of the optic nerve ceases, the eye no longer perceives the impression of the rays of light, yet it continues to live and to move : if the muscles of that organ become palsied, the eye neither sees, nor is capable of motion. In the last place, if the action of the nerves of its vascular tissue is gradually diminished, the organ is abandoned to the laws of affinity, and falls into a state of putrefaction.

It must here be observed, that independently of the compound action of the different systems, there are effected, in every point of the organization, a continual secretion and absorption, for which the nerves convey the principle of action, and the arteries the materials of nutrition.

END OF THE FIRST PART.

PART

PART SECOND.

—◆—
HISTORY OF DISEASES.

HISTORY

OF

DISEASES.

I. **HEALTH** is the essential result of regularity in the cerebral and nervous action, which causes each organ to perform the function assigned to it.

This nervous action is itself maintained by the result of the functions which it causes to be executed ; so that the nervous action and the functions of the various organs have a mutual dependence on each other.

The whole of the organization is composed of secretory organs, organs of motion, organs of the senses, and the intellectual organ.

In diseases, the *action* of these systems of organs, and the *results* of this action, may be increased, diminished, deranged, suspended, or destroyed, with or without any sensible alteration in the structure of the parts. All diseases, indeed, are only combinations of these different modes of derangement, with a slower or more rapid progress.

This general view may serve to convey some idea of the difficulties which occur in classing methodically all these disorders, the numerous combinations of which are indefinitely varied.

If it be very difficult to arrange, in a satisfactory manner, the functions of the organs and the phænomena resulting from the natural order of their action ;

action; to class all the derangements of them must be attended with still greater difficulty.

Each system of organs has only one general mode of action for performing, in a regular manner, the functions peculiar to it; and this mode of action may be deranged in a thousand different ways.

From these few observations on the number and nature of the organic derangements possible to exist, it may be readily conceived that the simplest and most general classification of them must be that which is attended with the fewest inconveniences: they may indeed be comprehended under a small number of principal heads.

2. When a point of the organization is irritated by any stimulating cause, whether external or internal, the state of the affected part experiences a change, the result of which may be an alteration in its organic texture.

All alterations of this nature constitute the **PHLEGMASIÆ**.

There is an essential difference between the various kinds of Phlegmasia, 1st, in regard to the system of the organs where they take place; 2d, in regard to their rapid or slow progress (acute or chronic); 3d, according to the constitution of the patient, the state of the atmosphere, &c.

We shall here give a history of the Phlegmasiæ, and consider them under all these different points of view.

PHLEG-

PHLEGMASIÆ.

PHLEGMASIÆ OF THE CELLULAR AND
PARENCHYMATOUS TISSUES.

3. WHEN any irritant whatever (the *aiguillon* of Vicq d'Azyr, the *spina* of Van-Helmont) acts on the cellular tissue of the skin, a painful sensation, which gradually increases, with heat, intumescence, redness, tension, resistant hardness, a greater or less sensibility to the touch, soon manifests itself in the part. At times, after a slight or even a violent coldness, the following symptoms take place : a general heat, excessive thirst, pain in the head, full, strong, accelerated pulse, watchfulness, &c. which all together constitute *febrile excitement*. The intensity of these symptoms, in general, is in the ratio of the irritation occasioned in the part, and of the local or universal sensibility.

After a first period of from four to six days, in the course of which the symptoms gradually increase, it may happen that they will abate by degrees and completely disappear. During this mode of termination (*resolution*), different excretions, more abundant, such as liquid bilious stools,

sweats, sedimentous urine, &c. are sometimes observed.

Sometimes the symptoms proceed to the same degree, or even make a further progress, with accelerated and very painful pulsation, a burning heat, &c. The tumour increases, is more circumscribed, becomes soft, and exhibits a summit more or less prominent, in the centre of which a collection of fluctuating liquid can be perceived by the touch. A diminution of the symptoms then takes place, accompanied with a sensation of heaviness and of painful tension. At times a shivering comes on; and at length, in consequence of a spontaneous or artificial opening of the part, a whitish opake and moderately thick liquid (*pus*) issues from it, and the pain almost immediately ceases.

At other times the symptoms as yet exhibit no indication of abatement; the part is of a bright red or purple colour; hard, distended, shining, and exceedingly painful when touched. Soon after, a livid or brownish tint, and vesicles filled with a yellow, reddish, and sometimes black serosity, are observed towards the centre of the tumour; the pain then decreases, the tumour subsides, and its wrinkled surface forms a black hard crust, full of cracks, and of greater or less thickness. At other times it becomes soft, exhibits a leaden colour, and assumes the consistence of paste. If these appearances (*gangrene*) continue, the parts successively

ſucceſſively corrupt; the pulſe becomes low and weak; the features of the countenance are altered; the limbs grow cold, and the patient ſoon dies. But, for the moſt part, the ſymptoms of phlegmon continue and increaſe; ſuppuration takes place in the part contiguous to that which is gangrened; and the latter, after a ſort of putrefaction, modified by a remainder of vital action, gradually detaches itſelf, and at length is completely ſeparated.

Such are the different terminations of PHLEGMON.

4. When a ſolution relates only to the ſkin, the cellular membrane, and even the muſcular parts, it produces ſymptoms which approach near to thoſe of phlegmon: ſwelling, redneſs, and heat, with pain and tenſion, indeed, take place, gradually increaſing. If the lips of the ſolution are in contact and at reſt, adheſion is eſtabliſhed between them; a *re-union* is effected, and all the phlegmonous ſymptoms abate, and diſappear in a few days. But, if the wound be left to itſelf, if the edges of it cannot be brought together, or kept in contact; in a word, if the irritation is very great, and its phlegmonous effect widely extended, a whitish liquid is ſeen to ooze forth, which gradually thickens, becomes opake, and towards the ſixth or ſeventh day aſſumes all the characters of pus. The phlegmonous ſymptoms then decrease, and concentrate

themselves in the injured parts; the purulent excretion progressively abates; the swelling subsides; the extent of the wound becomes less, and its surface is covered with pimples of a bright red colour: these pimples sink down, and exhibit, towards the edge of the wound, a thin pellicle or sort of epidermis, which unites itself to that of the skin.

Simple wounds.

5. When the wound relates to a white fibrous organ, such as an aponeurosis, a tendon, ligaments, articular membranes, &c. the symptoms may assume a much greater degree of violence.

Though these parts, in general, are endowed only with a slight degree of irritability, wounds in them are seen to unite in thirty-six or forty-eight hours, like the simplest solution of the skin. But the re-union often does not succeed, either through a deficiency of phlegmonous orgasm, or because the lips of the wound have not been properly brought together. The solution then remains open, without any very sensible pain, swelling, or redness; a serous matter issues from it, and slowly assumes opacity, whiteness, and all the characters of pus: at length, about the fifteenth day nearly, its surface, covered with a bright red granulation, quietly cicatrizes from the twentieth to the thirtieth day: this is often seen to take place in wounds near the articulations.

But under other circumstances, which depend

no doubt on the extent and the depth of the wound, the kind of instrument with which it has been made, and particularly the state of the irritability of the individual, the phænomena assume a quite different progress. After a series of symptoms, more or less violent, during the first seven days, suppuration, when once fully established, is followed by a period of calmness or stagnation, and towards the ninth or the tenth day the phlegmonous symptoms recur with more violence; the swelling often extends throughout the whole length of the limb; a high fever comes on, particularly towards the evening, with watchfulness, loss of appetite, thirst, and various derangements of the head, breast, &c. Pus seems to issue from all the parts adjacent to the wound, and to form itself into collections. The acute symptoms are not seen to decrease till between the fourteenth and twentieth days, at which time abscesses are formed in different parts. The limb, at first painful and distended, becomes flaccid, soft like paste, and almost entirely indolent, &c. The various apertures, then continuing to throw out pus, are gradually covered with a granulated surface of a vermilion red colour, and insensibly proceed towards cicatrification; the soft swelling decreases, and the limb gradually returns to its natural state.

During the course of these phænomena, if the white fibrous parts are uncovered, their surface is seen to assume a dull colour, more or less livid,

and to detach itself in dry films. These white parts then exhibit pimples of a vermilion red colour, which are confounded with those of the rest of the wound. *Wounds of the white fibrous organs.*

6. When a part loses its organic texture by the application of a chemical agent, or the sudden shock of a body which moves with great velocity, a phlegmonous action is produced around the wound, and is followed by swelling, redness, heat, pulsation, very acute sensibility, and at length suppuration. The parts bruised or lacerated by the contusion, or otherwise altered, according to the nature of the body or caustic applied, become dead, and detach themselves, exhibiting all the phenomena of gangrene. *Wounds from contusion.*

7. In all the cases here mentioned, when the secretion of pus has been fully established, and excretion freely takes place, the pain, swelling, heat and redness decrease; the phlegmonous action concentrates itself at the surface of the wound, which gradually closes, and becomes covered with granulations of a bright and vermilion red colour.

The suppuration also gradually decreases; the pimples subside, become covered with a thin epidermoidal pellicle, which proceeds from the circumference towards the centre of the wound, assuming all the characters of the skin, but leav-

ing a mark which always indicates the place of the scar.

8. Phlegmon may be determined by a great number of circumstances, such as pricking, wounds, contusion, burning, irritating applications, violent friction, and by a certain state in the general and individual constitution. Abscesses are sometimes formed in different parts, towards the end of several diseases. The development of a phlegmon is often seen to coincide with the cessation of some derangement in parts more or less distant; as highly varied affections are observed to manifest themselves at the period when the progress of a phlegmon ceases.

Phlegmon exhibits also a very great number of varieties, which depend on the strength of the irritation exercised on the part, and the state of the local or individual irritation. In some persons very slight wounds are attended with the worst consequences; while, in others, wounds which in appearance are exceedingly severe occasion only very slight symptoms.

The pus, with the nature of which we are not yet thoroughly acquainted, and which appears to approach very near to gelatin, exhibits also highly varied shades in its colour, its consistence, and its characters. The periods of the phlegmon are not always attended with that regularity indicated in

the description : purulent collections seem often to be formed instantaneously ; sometimes gangrenous marcidities is the first external symptom that appears : it then depends on a particular state of universal or local adynamia, which may speedily produce death.

9. *Pblegmon of the lungs.* At the commencement of a somewhat cold spring, in autumn, and particularly during a dry cold winter, some robust men, and persons in general who are not inured by habit to the severities of the weather, may be suddenly attacked by an acute disease, after violent exercise, and particularly of the organ of respiration, by the sudden impression of very intense cold on a part of the skin, and especially on the bronchiæ.

This disease announces itself by violent shivering, of longer or shorter duration. This symptom is immediately followed by burning heat, violent oppression and a sensation of tension in the breast, with a dull and heavy or acute and pungent pain, respiration laboured and short, scorching breath, and a greater or less degree of cough, which is at first dry ; a strong and high pulse, sometimes irregular ; and then weakness, anxiety, and heat around the hypochondria. Sometimes the powers, merely oppressed, are relieved by bleeding ; but at others the weakness and oppression are excessive, and the anxiety inexpressible ; respiration is exceedingly short ;

thort; the thorax, forcibly elevated, remains motionless, so that the abdomen alone performs the motions of respiration. The patient turned on his back with his head low, sometimes makes vain efforts to rise, and again falls down. At other times he cannot remain in a recumbent posture, but keeps himself almost in a vertical position, his shoulders elevated, his arms spread out, and his mouth and nostrils wide open: the pulse is then tremulous, and almost imperceptible; the limbs are cold, with partial sweats; the eyes are sparkling and fixed; the visage is puffed up, red, and almost livid. The patient loses all recollection, becomes insensible, and dies suffocated.

On opening the body, the two lobes of the lungs are found distended with blood, and hard as if carnified; at other times only one lobe or one of its parts appears to be in this state; but in that case its enlarged volume raises up the sides of the thorax, propels the mediastinum towards the opposite side, and impedes the action of the sound lobe. This is what Hippocrates calls the lungs falling to one side.

In other cases, where the disease is much milder, or when its progress has been moderated or suspended by timely bleeding, an insensible resolution takes place between the fourth and the fifth day.

At other times, between the fourth and the fifth day there is an easy and abundant expectoration

tion of a mucous matter, at first dilute, and uniformly tinged or merely striated with blood, which afterwards gradually becomes thick, and assumes a yellowish white colour: it is not a very favourable symptom when it appears only after the seventh day. At the same time the pain becomes acute, the cough less oppressive, respiration easier, and the pulse fuller. The patient can move with more facility, and begins to lie on both sides. At this period, it is often observed that the urine becomes turbid as well as abundant, and deposits a yellow or reddish sediment: a nasal or hæmorrhoidal hæmorrhage comes on; the stools are yellow, first liquid, and then of greater consistency. Sometimes phlegmons manifest themselves, or œdematous swelling, towards the thighs or legs, abscesses about the ears, &c.

All these external phænomena are favourable symptoms, when they take place before the ninth day, and go properly through their periods.

The disease, however, may continue a certain time without any sign of resolution; the symptoms, instead of gradually decreasing, maintain themselves in the same state, or even increase, accompanied with continued delirium, a weak and undulating pulse: the pain at length ceases, the febrile symptoms abate; the face, at first red and puffed up, returns to its natural size, and becomes pale, with a dark redness on one or both cheeks.

The

The patient is subject to slight, frequent, and irregular fits of shivering; has a short cough, without expectoration; experiences heat towards evening and during the night, with sweats around the neck and towards the forehead; his pulse is faint, weak, and quick; respiration is difficult, short, and sometimes attended with noise; the patient cannot lie on the sound side; his urine becomes spumous; the visage grows paler and paler; the whole body is extenuated; the weakness daily increases, and suppuration is then certain.

In this case, if the diseased part occupies a large space, so as to oppose the action of the sound part of the lungs, or if the abscess breaks in the bronchiæ, so as to inundate them suddenly with a large quantity of pus, the patient may be suffocated. However, if the pus be gradually evacuated by expectoration, there is some hope; but the indeterminate duration of the ulcer, consumption, and death, remain to be apprehended.

Sometimes the purulent collection is discharged into one of the cavities of the thorax. In this case the patient suffers a great deal when recumbent, and particularly on the sound side; in general he sits in bed, inclining a little forwards; a depression of the shoulder on the diseased side is observed, and a curvature of the spine: the latter causes an enlargement of the cavity filled with pus on the opposite side, which when struck emits a hollow sound;

found ; respiration becomes difficult, is performed with very little motion in the whole of the diseased side, and a striking difference is observed in the pulse of the two sides. In this state, the operation of empyema is almost always useless, and the patient falls a sacrifice to the disease.

Nothing very certain has been observed in regard to the period at which a want of resolution produces an unavoidable suppuration. Hippocrates depends on suppuration after the fourteenth day. Stoll found the lungs in a state of phlegmonous turgescence, and still without suppuration, on the twentieth day : bleeding had been amply repeated ; he found the same state on the ninth day in a patient who had received no assistance. The degree of sensibility peculiar to the individual, the means of cure employed, &c. may occasion great variety in the progress of the disease.

After a very violent commencement and a rapid progress, if the pain and oppression suddenly cease, and if there come on at the same time extreme debility, weakness of the pulse, coldness of the limbs, and about twelve hours after an expectoration of ichorous, black, livid, and highly fetid matter, the patient will fall a sacrifice to gangrene.

Such are the general progress and the different modes of termination exhibited by phlegmon of the lungs : *Pneumonia*.

This affection of the proper tissue of the lungs is
rarely

rarely found alone, being for the most part accompanied by that of the *pleura*, and that of the *bronchiæ*, the characters of which we shall explain hereafter.

II. *Phlegmon of the liver* is much less common than that of the lungs : it commences, in general, by a shivering more or less evident, and of greater or shorter duration, followed by an universal heat : the pulse is quick, weak and hard ; the patient has an ardent thirst, &c. a painful tension ; and sometimes a striking elevation of the right hypochondrium, or even of the epigastric region, is observed, with a sensation of heaviness, or a pain sometimes dull and at others acute and pungent. The patient cannot bear the application of the hand to that region ; he finds himself better when recumbent on the back, or on the right side than when on the left ; inspiration is exceedingly painful, and is performed almost entirely by the motion of the thorax.

In certain cases, respiration is exceedingly confined and interrupted ; the pleuritic pain extends as far as the clavicle, and is increased by every movement of the breast. The patient has a dry cough, which is sometimes accompanied with a slight expectoration tinged with blood ; hiccup, delirium, &c. ensue. As the phlegmonous or-gasm approaches very near to the surface of the diaphragm,

diaphragm, the disease may be sometimes taken for a pleurisy or pneumonia.

At other times the patient experiences nausea, with a pinching in the œsophagian part of the stomach; throws up his food or drink, and then a bilious matter. Sometimes he complains only of tension and uneasiness towards the epigastric region: the seat of the phlegmon approaches the abdominal surface. Yellowness of the eyes and of the skin are far from being constant symptoms.

The disease may terminate in a few days by a simple and insensible *resolution*, or *critical* movements. announced before the fourth day by bilious stools sometimes tinged with blood; an ample evacuation of thick red urine, which deposits a whitish sediment; a strong hæmorrhagy of the nose, and particularly from the right nostril; a hæmorrhoidal flux, gentle and universal sweats, a slight sensation of pain in the spleen.

A phlegmonous tumefaction of the liver seldom resolves itself completely; it almost always leaves nuclei or tubercles, formed no doubt by concretions of albumen effused in the tissue of the organ. They are frequently met with by anatomists at the surface and in different parts of this viscus; sometimes the whole affected part remains in a state of hardness and tumefaction, which often determines a sensation of heaviness and oppression, with habitual vomiting; the hypochondrium

chondrium is elevated, hard and distended ; jaundice frequently takes place, with bloody stools, vomiting, hæmorrhoids, flabby swellings in the legs, and the disease often terminates by a mortal consumption. Different concomitant phænomena are commonly observed in a great many of the other viscera, and particularly in the spleen.

If the covering which envelops the liver be in particular affected, there frequently takes place at its surface a lymphatic exudation ; and the result is membraniform concretions, which cover and sometimes unite together the liver, the intestines, the mesentery, and the peritonæum.

But if the disease continues a certain time with uniform or even increasing intensity, without any sign of resolution, and without favourable excretion at a certain period, the pain becomes more acute with repeated throbs ; the shooting then decreases, and nothing remains but a sensation of heaviness ; irregular fits of shivering come on, with slight attacks of fever, an ardent thirst, partial and wandering sweats : in this case suppuration has already taken place ; the matter is discharged sometimes into the abdomen, and forms a purulent ascites, for the most part sanious : at other times it is poured into the duodenum through the biliary pores, and is evacuated by vomiting and by stools. In general, a purulent diarrhœa remains ; the strength becomes gradually exhausted, and consumption at length

length brings on death. The matter is sometimes conveyed through the diaphragm as far as the lungs, and is evacuated by the bronchiæ or discharged into the thorax. At other times a direct communication is found between the seat of the purulent discharge and the stomach. In certain cases the liver has been found converted almost entirely into pus, and forming a large vomica. In the last place, if the abscess directs itself outwards, a flabby swelling, sometimes painful to the touch, and exhibiting afterwards a manifest fluctuation, is observed under the integuments. The abscess opens; and if the pus be white, inodorous, and of a uniform consistence and colour, some hope remains; but if it be sanious, brownish, and fetid, a cure is always very uncertain.

Phlegmasia of the liver may leave immediately after it a state of constriction in the ductus choledochus, or an inspissation of its tunics; and the bile secreted after the liver returns to its natural state is accumulated in the gall-bladder. The latter, gradually extended, exhibits externally a fluctuating tumour, which may be readily taken for an abscess. But, in this case, the pain is not throbbing, the shiverings are of short duration; there are no slight sweats, no flabby swelling of the integuments; the tumour is always below the ribs, behind the right pubio-sternian muscle; it is perfectly circumscribed, with fluctuation, in every

part of its extent, and without any hardness or swelling towards its circumference. If the point of its adhesion with the parietes of the abdomen be discovered, a puncture may be made in that part; but the aperture almost always remains fistulous.

At the commencement of the disease, an erysipelatous affection has sometimes been observed in the right hypochondrium, with an impossibility of enduring the slightest touch. These symptoms are soon followed by heat, prostration of strength, anxiety, great agitation, vomiting; reddish stools, black, and exceedingly fetid; continual hiccup, cold sweat in large drops, coldness of the limbs, and thirst; the pulse is exceedingly weak; the patient experiences frequent shivering, with sudden paleness; the cheeks fall in, the eyes seem sunk, the nose projects, &c. and death soon ensues.

Phlegmasiæ of the liver seem to be more painful when they affect at the same time the membrane by which that organ is covered. Very considerable abscesses are frequently observed in the substance of the liver, while no symptom gives reason to suspect their existence. These secret phlegmasiæ coincide, for the most part, with some affection of very distant parts, and particularly of the head. It is well known that abscesses, which are not announced by any appearance of a phlegmonous nature, manifest themselves externally, and especially

especially towards the end of some fevers or febrile diseases. *Hepatitis.*

12. The liver becomes the seat of chronic phlegmasiæ as well as the lungs. It is not uncommon to find the liver exceedingly voluminous, hard, and interspersed with tubercles, either at the surface or at a considerable depth, exhibiting internally a whitish colour, or small purulent collections, and ulcers full of a sanious liquid, &c.; adhesion to the parietes of the abdomen and other viscera, &c. without any signs of acute phlegmasia, but only sometimes slight wandering pains, repeated jaundice, &c. These diseases are not yet known but by anatomical researches.

Hepatitis may be determined by a severe contusion on the region of the liver, overstrained running, the use of cold liquors after too great exercise, excessive sorrow, violent transports of passion, a contusion or wound in distant parts, as the hand, leg, and particularly the head, &c. This disease coincides sometimes with a suppression of the menses, or an habitual hæmorrhoidal flux.

Chronic hepatitis may be the result of the same causes, acting with less energy but more frequently, such as long continued grief, frequent transports of passion, abuse of strong spiritous liquors, premature use of cinchona in intermittent fevers, &c.

13. *Phlegmon of the kidneys.* Medical observers,
and

and in particular Morgagni, mention a number of facts which show the aptitude of the kidneys for phlegmonous affection. The patient towards the lumbar region experiences a burning, acute pain, fixed and constant, which is propagated sometimes along the ureter, as far as the groin, with a numbness of the thigh, and retraction of the testicle. The malady begins with a shivering, followed by universal heat, acceleration of the pulse, thirst, anxiety, nausea, vomiting, and even a painful constriction towards the epigastric region. The urine comes off in small quantity, and is exceedingly red and burning, with a frequent desire of voiding it.

These symptoms sometimes disappear in the course of a few days, and a favourable termination may always with certainty be expected when an abundant hæmorrhoidal flux comes on at the commencement; when an ample discharge of red, thick, and sedimentous urine is established, before the seventh or at least the fourteenth day, and continues for several days.

But if the disease maintains itself, or goes on increasing, suppuration is commonly announced after the seventh day by a painful sense of pulsation. The latter at length ceases, and is followed by irregular shivering, with torpor and heaviness in the part; the urine becomes fetid and thick, and deposits a purulent matter. Sometimes the whole of the kidney is converted into

pus, which is evacuated by the excretory ducts of the urine; and the result is a renal phthisis, generally of long duration. After death, nothing is found in place of the kidney but a membranous bag. At other times the abscess manifests itself under the skin, and opens externally; in which case there almost always remains an incurable fistula. It seldom happens that the pus is evacuated by the colon.

A voluminous induration of the kidney commonly determines a palsy, more or less striking, of the corresponding abdominal limb. This affection of the kidney may sometimes give rise to a slow consumption, dropsy, &c. *Nephritis*.

If with the common signs of nephritis the urine becomes livid, black, and full of brown flakes, &c. gangrene will ensue, and produce death.

Nephritis, in general, depends on the same circumstances as all the kinds of phlegmon: a severe blow on the region of the kidneys, a violent effort either in running or riding, the abuse of strong diuretics, cantharides, &c. but it is often produced by the presence of urinary calculi in the kidneys. In this case it exhibits remarkable peculiarities. A heavy lacerating pain, with intervals of remission, or even complete intermission, is experienced; the return or exacerbation of the pain is determined by the agitation of walking, or riding either in a carriage or on horseback; the
urine

urine is generally sanguinolent, and deposits a mucous matter, and sometimes calculous fragments: it is then, in particular, that the pain is propagated along the ureters. This affection, though exceedingly painful, is very often transient, and produces no febrile symptom, and no sign of acute phlegmasia; but in other cases it assumes all the characters of it, and at length brings on suppuration.

14. The particular signs which announce the maturation of a phlegmon in the tissue of the spleen, and in that of the brain, are not yet known. These phlegmonous affections, for the most part chronic, are not observed till after death.

15. *General character of phlegmasiæ of the cellular and parenchymatous tissue of the organs.* In whatever part a phlegmon may arise, it is always the result of an irritation determined in that place. In all cases there is an afflux of fluids accompanied with swelling, pain, and very often an acute and continued fever.

When these symptoms progressively abate, a *resolution* is effected towards the first or second week; but if they continue or are increased, with shooting pains, wandering and repeated shivering, *suppuration* is established. In the last place, when the symptoms suddenly cease, with apparent calm-

ness, an alteration in the features of the face, a weak and depressed pulse, *gangrene* will soon ensue.

In many cases the phlegmon establishes itself slowly, and as it were in silence; the symptoms are very transient; and yet this *chronic phlegmon* may exhibit the same modes of termination as *acute phlegmon*.

The phlegmonous affection may produce also a state of *induration*, the further progress of which we shall describe in another place.

PHLEGMASIÆ OF THE SEROUS MEMBRANES.

16. **P**HLEGMASIA of the *pleura* gives rise to an acute and generally very severe disease.

Its commencement is announced by shivering, spontaneous lassitude, and soon after the heat gradually increases to such a degree as to become burning; the patient has an ardent thirst, with a quick pulse; and all the signs of general excitement become very apparent. At the same time there arises in a small point of one side of the breast, or in both, a pain which increases progressively, and becomes very acute; this pain is more violent during inspiration. Respiration, confined, short, and almost entirely abdominal, is interrupted and as if stopped by the sensation of pain. The patient has a frequent and painful cough without expectoration. The pulse, which is quick, hard, and distended like a string in a state of vibration, is often weak and soft on the affected side, and may therefore lead into an error.

If the disease be slight, it sometimes terminates speedily by an insensible resolution; at other times its resolution is announced before the fourth day by a nasal hæmorrhagy, an abundant hæmorrhoidal flux, an ample excretion of thick urine, which

deposits a white sediment ; yellow bilious stools, &c., and a gradual diminution of the symptoms. It announces itself also by the pain being extended towards the shoulder, the arm, and the back, with a sensation of numbness and heaviness in these parts ; by the expectoration of a white matter, at first thin, then thick and purulent, &c. All these signs indicate the cure on the ninth or eleventh day.

Sometimes the patient is suddenly threatened with suffocation ; respiration is short, accelerated, and highly fatiguing ; he is obliged to sit, inclining a little forwards ; the pulse is weak and exceedingly quick ; the limbs become cold ; the visage shrinks ; and after death there is found, in the cavity of the thorax, a large quantity of transparent or opaque lymphatic matter, interspersed with albuminous flakes, almost similar to a purulent matter. At other times this matter exudes slowly, and the collected liquid, which contains a great deal of albumen, and of which the aqueous part is absorbed, produces a membrane-like concretion, which unites the pleura to the lungs, and forms around that organ a covering sometimes an inch in thickness.

Stoll is of opinion that these concretions become organized in the course of time ; but this peculiarity has not yet been proved.

The adhesion of the lungs is sometimes slight,
and

and does not seem to occasion any inconvenience to the patient. At other times it produces a habitual difficulty of respiration, which is increased by motion, by a state of plenitude, in almost all acute diseases, and it then becomes a disposition essential to affections of the breast.

In the last place, the serous liquid discharged may be entirely absorbed; or the quantity of it collected increases gradually to such a degree, that the result is a hydrothorax.

An affection of the pleura occasions sometimes a phlegmon in the pleuro-costal cellular tissue: in this case, the purulent collection may either make a passage for itself beyond the thorax, or be discharged into that cavity; or even penetrate into the interior of the lungs, and escape by the bronchiæ.

Sometimes, when the disease continues with a very great degree of violence, the pain suddenly ceases, the pulse becomes feeble, quick, and intermittent; respiration is frequent, short, and difficult. These symptoms are succeeded by a cold sweat and delirium; the diseased side sometimes exhibits a livid colour, and gangrene and death ensue.

In the last place, the pain in the side is sometimes so acute that all movement of the breast becomes impossible; respiration towards the thorax is suspended,

pended, and sometimes even towards the diaphragm, so that the patient dies suffocated.

This affection has its seat in the pleura: the series of phænomena which it exhibits, its modes of termination, and the results which appear on opening the body, leave no doubt on this subject.

Pleuritis.

Pleuritis exhibits remarkable shades, according to the different parts of the pleura which are affected: thus, a very acute pain is sometimes experienced below the sternum, between the shoulders, which extends from the spine to the sternum; at other times the pain is profound, and accompanied with anxiety, palpitation of the heart, &c. In several cases an exceedingly acute pain extends from the last ribs to the last vertebræ of the back, with short respiration, convulsive hiccup, and delirium. During inspiration, the patient may experience very severe shooting pains from the pit of the stomach till towards the loins, with a retraction of the hypochondria beneath the ribs, the abdomen remaining motionless. In other cases, the phlegmasia occupies the whole extent of the breast; the patient experiences pungent pains, with oppression, continual anxiety, a constant desire to remain in an upright posture, &c. : but it is seen that these accessory phænomena are connected with the par-

ticular seat of the irritation, and make no change in the essential character of the disease.

There are some instances of pleuritis in which the pleura alone is affected ; but, for the most part, this disease is combined either primitively or consecutively with phlegmasia of the lungs ; and perhaps it is then alone that it produces death by suffocation. It is besides difficult to comprehend how a pleurisy could terminate with expectoration, were there no irritation towards the bronchiæ.

Pneumonia, for the most part, exhibits phenomena which, according to every appearance, ought to be referred to an affection of the pleura ; but how often have we not seen the symptoms of pneumonia accompanied, in some measure, with the principal characters of pleurisy : such as a pungent pain in one of the sides, increasing by inspiration and the motion of the breast ; a small, dry, and as it were strangled cough ; very painful and interrupted respiration, a hard full pulse, &c. without any signs of phlegmasia being found in the pleura after death !

However favourably a pneumonia or pleurisy may terminate, the result always is an alteration in the organ, more or less striking, if it be only a peculiar degree of sensibility, which disposes it in a singular manner for again contracting the same disease. Sometimes there remains, during life, a kind of restraint or uneasiness ; a small cough, which

which returns, especially in certain positions, after motion and after meals; or a dull, heavy, or pungent pain, which is felt when the body is placed in a certain posture, during a strong inspiration, an effort to cough, to cry, &c. This is the state which Baglivi calls *pleurisy, occult* or *chronic peripneumony*.

This state seems to arise sometimes from an inspissation of the pleura, adhesion produced during an acute pleurisy, the remains or nuclei of phlegmatic congestions, which have not disappeared by resolution; the presence of tubercles or small hard masses, occasioned by lymphatic exudation, become concrete in the pulmonary tissue, &c.

This state sometimes succeeds a catarrhal cough, or even seems to develop itself primitively, especially in individuals remarkable for a peculiar conformation, either natural or acquired. These individuals have a thin, slender form; are of a rapid premature growth; have a narrow flat chest, projecting shoulders, a long slender neck, rosy cheeks, a very fresh complexion, acuteness superior to their years, and a great deal of nervous sensibility. In such persons, sudden exposure to cold, any violent effort, a slight attack of fever, the revolution of puberty, &c. determine at first a spitting of blood (*hæmoptysis*), sometimes abundant, and which is periodically renewed, with a little heat, uneasiness at the breast, &c. Some very obscure symptoms of pneumonia

are gradually developed; a suppuration at length takes place, consumption is slowly established, and death ensues. On opening the body several foci of purulent matter are observed in the lungs.

17. The reader has here seen the history of pleuritis and of simple pneumonia, which take place in an individual who before enjoyed perfect health; but there are few diseases with febrile excitement which may not, in their progress, exhibit pneumonic or pleuritic symptoms, more or less striking, more or less continued or transient. These symptoms sometimes are the mere result of a sympathetic correspondence between the breast and the organ which is the principal seat of the affection, and which may proceed so far as to produce a real phlegmonous congestion. At other times they arise from the existence of a chronic phlegmasia, perhaps very old, exasperated by the development of the present disease. In certain cases it is not improbable that the affection of the pulmonary organ may appear in combination with another disease; but, for the most part, this combination depends on the particular state of the individual before the disease manifests itself. It is on these principles that we must analyse the history of epidemical diseases, and the particular observations which are found in original authors.

18. Stoll

18. Stoll gives a great many cases of pneumonies or gastric pleurifies. Several days before the attack of the disease, the patient experiences loathing, nausea, and bitterness in the mouth. After its commencement the symptoms are : a violent pain in the head, great sensibility in the epigastric region, vomiting, and sometimes diarrhoea ; a strong burning heat, insatiable thirst, &c. An emetic, either with or without previous bleeding, often removes the symptoms of gastric embarrassment, suppresses the spitting of blood, and the affection of the breast speedily terminates. At other times the phlegmatic symptoms disappear, and leave a simple bilious fever : in certain cases, the disease continues its usual course, always retaining some gastric symptoms.

19. Huxham observed peripneumonies of an entirely different character among sailors exhausted by the fatigue of long voyages, and previously affected by scurvy. This disease announces itself by perfect indifference to external objects, weakness on being exposed to the least motion, irregular alternations of shivering and heat. The fever then appears with great heaviness towards the hypochondria, difficulty of breathing, and a dry cough exceedingly oppressive ; the pulse is quick, weak, and soft, accompanied with partial and clammy

clammy sweats; the patient experiences continual anxiety and restlessness; expectorates a thin, sanguinolent, or brownish and highly fetid liquid; petechiæ and a bloody diarrhœa come on between the fifth and the seventh day; the urine is blackish, without sediment; the tongue becomes brown, and the teeth are encrusted with a thick black matter. The patient after this period is exceedingly weak, the pulse is intermittent, and cold sweats and syncope are frequent. Dr. Huxham having caused cupping and scarification to be employed in two cases of this kind, it was found impossible to stop the bleeding, and the patients died.

In certain epidemiæ, the disease begins with an acute pain in the side, accompanied by a severe oppression and very violent cough; the pulse is strong, quick, and full; but after once or twice bleeding it suddenly subsides, and is followed by a tumour of the limbs, subcultur tendinum, abundant sweats, black, bilious diarrhœa, and at length drowsiness or delirium. In this case, the blood coagulates with difficulty, and becomes black, and covered by a very fine blue or greenish pellicle; while in simple phlegmasiæ of the breast the crassamentum of the blood is very compact, dense, and covered by a skin somewhat like that of bacon.

20. *Phlegmasia of the stomach.* When the
stomach

stomach experiences strong and continued irritation, it exhibits a series of phænomena different from that which characterizes the preceding phlegmasia, but which in many respects approaches it.

In this disease there are first observed a general coldness, shivering, spontaneous lassitude, and great dejection, which are soon succeeded by universal heat. The pulse is accelerated, hard, confined and unequal; the patient experiences great oppression and anxiety, a fixed burning and acute pain in the epigastric region, and excessive thirst. By the use of the mildest beverages the pain is dreadfully increased, with vomiting of matter, sometimes bloody or blackish.

The disease makes a rapid progress, and the fever continues without intermission: great oppression and frequent syncope take place, with hiccup, repeated convulsions, delirium, coldness of the limbs, and the patient soon expires. On opening the body the stomach is sometimes found to be gangrened, at least in certain parts. *Gastritis*.

21. If this affection be slight, it may terminate by an insensible resolution. Like that of the pleura, it sometimes produces an adhesion of the stomach to the neighbouring viscera, either immediately or by means of an albuminous exudation, which is converted into a membrane-like substance.

Acute phlegmasia of the stomach may be excited by the too copious use of iced beverage when the body is over-heated ; by the introduction of highly irritating substances into the stomach, and particularly of some oxides or metallic salts. The affection produced by these substances is highly dangerous, and often occasions very sudden death.

Hoffmann, however, gives a case of several persons poisoned, at an entertainment, by arsenic put into some of the dishes instead of sugar, who were saved by the timely use of an enormous quantity of milk with oil of sweet almonds : to some of the patients, who used these substances in less abundance, a great many oily and mucilaginous injections were administered, and all of them escaped : some of them vomited a hundred times. When death takes place so suddenly, the putrefaction is often very rapid ; the abdomen swells up, an extravasation of the blood takes place, the hair drops off, &c. The stomach is found distended, interspersed with livid spots, and sometimes pierced entirely through ; the mouth, the œsophagus and the stomach are stripped, at least in certain parts, of their mucous tunic ; sometimes the noxious matter is found in its natural state, or dissolved, in the stomach or the first intestines : it may be known either by inspection or by chemical analysis, or by trying it on other animals.

The exquisite sensibility of that organ, and the extensive connection it has by means of the nerves with every part of the animal œconomy, account in a satisfactory manner for the rapid and terrible effects of such læsion. In many cases, the poisoned individual often escapes sudden death, only to drag out a miserable existence with a continual pain in the region of the stomach. He experiences a habitual dryness and heat of the skin; aridity in the mouth and throat, &c.; pains and spasms in the limbs, &c.; a febrile state, and other symptoms, which sometimes gradually decrease, but which often terminate in death.

22. Sometimes the tunics of the stomach, thickened by a slight phlegmatic affection, remain swelled in some parts, and particularly towards the orifices of that organ.

Anatomists often find the pylorus thick, hard, tuberculous, and semi-cartilaginous, with a very considerable constriction of the orifice.

The affection of the orifice of the pylorus is announced, for the most part, by obstinate vomiting; and that of the orifice of the œsophagus by a very great difficulty or even absolute impossibility of swallowing. This state is accompanied by acute pains in the stomach, especially after meals. Obstinate costiveness takes place, with frequent vomiting, and black or bloody stools: a slight fever

fever ensues, and a slow marasmus terminates in death.

These tumours of the pylorus are not always sensible through the integuments. Being at first almost indolent, they occasion no other inconvenience than what arises from a constriction of the orifices of the stomach. In the end, however, they often become exceedingly troublesome, and are accompanied with shooting pains, or a very sharp sensation of pricking. A particular mode of action, by which they are converted into a sort of ulcers, that discharge a sanious and reddish liquid, is sometimes established in their interior parts. The patient then experiences a sensation of burning, especially when any thing enters the stomach, and he vomits up a fetid brownish liquid.

Anatomists often find similar ulcerations in the pylorus, almost always accompanied with an inspissation of the tunics of the stomach, and a contraction, sometimes considerable, of the calibre of the intestines.

This state of inspissation of the stomach, with induration, the ulcers at the orifice of the pylorus, and sometimes at that of the œsophagus, are not the result of an acute phlegmasia alone. They are often formed slowly by the concurrence of different irritating causes, the continued or frequently repeated action of which excites, in this part, a chronic phlegmasia, differing from an acute

phlegmasia only by its degree of intensity, and by a much slower progress. In this case, the pylorus at length becomes thick and hard, and the orifice is almost entirely closed; though few signs of phlegmasia can be easily discovered.

These chronic affections of the stomach often coincide with a sudden cessation of some habitual excretions: such as hæmorrhoidal flux, the discharge of purulent matter towards the anus, and in some other parts.

In some circumstances, this malady seems to be excited by frequent fits of those melancholy mental affections which produce a contraction towards the epigastric region; by excessive grief of long continuance; habitual transports of passion; after the too free use of spiritous liquors, acids, &c. Persons thus affected are generally melancholy, gloomy, peevish, meagre, and valetudinary. This general state may be either the cause or the consequent effect of organic alteration in the stomach.

23. *Phlegmasia of the intestines.* By the influence of causes similar to the preceding, the *intestinal canal*, in one or more parts of its extent, may be attacked by a phlegmasia of the same nature.

After the usual symptoms, such as coldness, shivering, tremor, &c. the patient experiences, in some part of the abdomen, very acute, fixed, ardent, pungent pains, which are increased by the accumulation

accumulation of flatulencies or of liquors. The belly is exceedingly painful when touched; the body becomes very hot, with a hard, tense and close pulse, accompanied by vomiting and obstinate costiveness.

The patient labours under great anxiety and continual agitation, accompanied with sweat and a speedy prostration of strength. Sometimes the affected intestine forms itself, under the integuments, into an oblong renitent tumour, exceedingly sensible to the touch.

When the phlegmasia is very acute, accompanied with great irritability, as is the case in the female sex or in children, the patient often falls into convulsions. At other times the pain suddenly ceases, the pulse becomes weak, quick, and intermittent; the limbs, seized with numbness, are covered with a cold sweat; the face shrinks; sometimes the senses remain, or are even exalted. At other times a gentle and calm delirium takes place; the belly swells up, the stools are fetid, black, and *cadaverous*, and death speedily ensues. On opening the body, portions of the intestines are found withered, flabby, and livid, and sometimes pierced entirely through, while the neighbouring parts are of a violet or brownish red colour; turgid, often thickened, or covered with membranous concretions. In other cases, an

effusion

effusion of serous matter, mixed with albuminous flakes, is observed in the abdomen. Flakes or membranous fragments are sometimes found in the fæces: these in certain cases arise, no doubt, from an exfoliation of the mucous membrane: at other times they seem to be the result of an exudation, which has assumed a concrete state in the intestinal canal.

Sometimes the disease, much milder, terminates in a few days by a complete resolution; but it often leaves behind it, and in the part chiefly affected, an habitual sensation of heaviness, with twitching. The patient becomes very subject to pains of the colic, costiveness, vomiting, and even hiccup. At length, after a certain time passed in this valetudinary state, there comes on a gradual extenuation, which terminates in consumption and death. In some cases the patient is subject to acute pains, which irregularly increase; a fever, sometimes mild and sometimes severe. After death the intestinal tunics are found to be thick, hard, and semi-cartilaginous; the intestines, knotted, and adhering to each other and to the neighbouring parts, form masses which are sometimes very voluminous; their calibre is contracted, or even entirely obstructed. The upper parts of the intestinal canal are strongly distended by gaseous substances, or by the excrements. Sometimes there

there are found ulcerations which discharge a liquid generally of a dilute nature, turbid, brownish, or sanious, &c. *Acute enteritis.*

24. These different alterations are not always the result of acute enteritis. Certain individuals, and particularly females, after experiencing for a very long time an extreme sensibility of the abdomen, a sort of habitual laceration, without fever, heat, or costiveness, fall at length into a state of languor, which terminates in death. Though no symptoms similar to those of acute enteritis appeared; the body, on being opened, may exhibit analogous results, such as an effusion of serous matter, flakes, albuminous membranes; the vessels of the intestines turgid, their tunics thick, red, brownish, indurated, and semi-cartilaginous; masses of the organs united and agglomerated. *Chronic enteritis.*

Enteritis is occasioned, in general, by circumstances analogous to those which may produce all the other phlegmasiæ: such as violent percussion of the abdomen, wounds in the intestinal canal, a strangulated hernia, the operation for it, that of cutting for the stone, the use of highly irritating substances, poisons, the presence of worms, accumulation of the fecal matters, a running which obstructs the canal. This disease sometimes succeeds a hæmorrhoidal or menstrual suppression; it often comes on after parturition; and to it the bad

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consequences

consequences of that natural function are in a great measure to be ascribed.

25. A variety of facts, collected during life and after death, attest that the uterus often becomes the seat of a phlegmasia, either chronic or acute. The sides of that organ indeed often exhibit an inspissation and semi cartilaginous induration, in a part or the whole of their extent: towards the neck, in the Fallopian tubes, and the ovaria, there arise unequal ulcerations, swelled towards their edges, brownish or livid, which discharge blood, with a turbid, reddish, fetid and black excretion. The patient experiences, at the bottom of the pelvis, towards the groin or the loins, sharp, acute pains, which extend sometimes as far as the hypochondria and the shoulders. A violent pain in the head takes place, and the legs become œdematous.

These effects, which are often the result of an acute phlegmasia, come on sometimes insensibly, or with very slight but long continued phlegmasic symptoms. Morgagni found, in the posterior side of the uterus, a tumour as large as the head, which had grown up in the course of ten years, with a very slight pungent but continual pain, and some occasional attacks of fever.

These tumours continue sometimes very long without having occasioned much inconvenience. But, when a crisis is established, which terminates in a sort of suppuration, the pains become for the most
part

part intolerable, the appetite and sleep are lost, the strength gradually declines, the emaciation of the upper parts of the body forms a contrast with the flabby swelling of the legs, and a flux ensues. Analogous affections often take place in other viscera of the abdomen, particularly in the liver, in the mesentery, in the spleen, and often in the pylorus.

Diseases of the uterus, though hitherto considered as belonging as much to the province of the *accoucheur* as to that of the *physician*, have been very little studied by either. The former, it would appear, adhering closely to the study of one system, confines his view within too narrow bounds. Besides, the very striking influence which the uterus has on divers parts, but particularly on the abdomen, the head and the breast, produces in all these affections a certain complication, through which it is almost always impossible to discover the character of the primitive disease: this is a reason also why our knowledge, in regard to this part, has made so little progress.

To the antients, therefore, and particularly Hippocrates and Aretæus, we are indebted for our most correct ideas in regard to acute uterine phlegmasiæ. After a paroxysm of shivering, more or less apparent, speedily followed by an universal heat, with headach, aridity of the tongue, violent thirst, quick and hard pulse, the patient experiences a tension, with a fixed, acute, pungent pain in the

the hypogastric region. This pain sometimes has its particular seat towards the sacrum and the loins, and is accompanied with costiveness, and simultaneous compression or irritation of the rectum; sometimes towards the pubis, with a frequent desire to make water, and a sensation of burning when the urine passes.

In certain cases, the patient experiences tension towards the groin, with numbness and heaviness in the thighs, &c. Sometimes the pain seems to be situated profoundly in the pelvis, and the finger finds the orifice of the uterus swelled, hard, and renitent.

Parturition is almost always followed by analogous phenomena, which terminate in the course of a few days, at the same time that a secretion of milk takes place in the breasts. But in certain cases the affection becomes much more violent, with a compression of the abdomen, phlogosis in the mesentery and intestines, and very great sensibility throughout the whole extent of the abdomen. The lochia are then suppressed, the mammellæ no longer swell up, or they sink down; the face becomes red and voluminous, the eyes project, and a few drops of blood frequently fall from the nose. The patient soon experiences great agitation, watchfulness or disturbed sleep; respiration is difficult; delirium takes place, with convulsions, pains throughout the whole body, a prostration of strength,

strength, shrinking of the visage, and frequent fits of fainting; the pulse, which is at first hard and close, becomes almost imperceptible, and death often ensues on the seventh, ninth, or eleventh day. On opening the body, the uterus is found swelled, hard, and brownish; sometimes corrupted and gangrenous. In the abdomen is very often observed a whitish serous liquid, containing sometimes shreds of albumen in a concrete membranous form, and sometimes albuminous flakes. At other times this liquid is whitened, almost uniformly, by the mixture of a grumous matter of the same nature. This liquid, similar to that produced in the male in the case of enteritis, is considered by some physicians as milk effused into the abdomen.

A favourable issue may, in general, be hoped for when the strength is pretty well maintained; when the breasts swell up, when the uterine evacuations resume a free course, or when an abundant hæmorrhoidal flux takes place.

A wound in the uterus, a blow on the abdomen during pregnancy, a difficult parturition, may determine a phlegmasia of this organ.

It is during the course of menstruation, and particularly after delivery, that women are most exposed to the danger of contracting this malady. The sensibility of the organ being then greatly exalted seems to concentrate in it all the irradiations

tions of life. It is there that all the possible causes of physical or moral irritation are felt in an alarming manner: transports of passion, sudden fear, too ardent affections, any violent effort, the impression of cold. The abdomen almost always participates in the effects of the disease. After delivery, in particular, there is produced in all the viscera of that cavity a very great revolution, arising from the sudden removal of a support to which they were habituated; from the efforts by which the whole abdominal system concurred to the act of parturition; from the intimate connection between these viscera and the uterus; and from the very striking change produced at that period in the circulation of the fluids, all the movements of which seem to be directed in a special manner towards the abdomen.

This affection often attacks women exhausted by fatigue, by poverty, and every kind of want, when surrounded by insalubrious objects, in crowded hospitals, &c. The disease being then combined with adynamic fever makes a rapid progress, and almost always produces death. *Puerperal fever.*

Chronic phlegmasiæ of the uterus may take place under the same circumstances; but they appear chiefly towards the period of the cessation of the menses in women who lead too sedentary a life, who live poorly, who are a prey to sorrow

and grief, who observe a continence contrary to the desires of nature, &c. *Hysteritis.*

26. If a man receives a violent contusion in the perinæum or the hypogastric region, he may experience, after a certain time, towards the pubis, an acute settled pain, with a continual desire, a very great difficulty, and even impossibility of voiding urine; the urine is red and scorching; a hard tumour, sensible to the touch and even to the eye, appears above the pubis, accompanied by acute fever, thirst, and sometimes tenesmus. In certain cases, some symptoms make their appearance towards the genitals, the ureters, and the kidneys. In consequence of the further progress of the disease, the patient experiences hiccup, vomiting, delirium, and coldness of the limbs. Phlegmasia of the bladder follows the same course as that of the stomach or intestines. The resolution is effected in analogous periods, and sometimes with sanguinolent evacuations, either by the urinary passage or the anus. Lymphatic exudations take place, with albuminous concretions, and adhesion of the bladder to the neighbouring parts; the tunics sometimes remain thick and indurated, and after a certain indeterminate time become ulcerated. The disease often terminates by gangrene, especially if, in the case of a complete suppression
of

of urine, care has not been taken to evacuate that liquid by means of the catheter.

A wound in the bladder, the use of highly stimulating diuretics, cantharides, the presence of a calculus with sharp points, may determine this malady, which however takes place sometimes without very apparent causes. *Cystitis*.

27. The different phlegmasiæ of the serous membranes, the history of which has been here given, all belong to the same family; and phlegmon, which being exposed to the eye suffers all its gradations to be clearly seen, may be considered as their common type. The phænomena peculiar to each of these phlegmasiæ arise from a derangement of the functions proper to the systems affected. Thus pleurisy is attended with difficulty of respiration, oppression, heavy or acute pain in the breast, cough, expectoration, &c. In hepatitis the symptoms are, costiveness, tension, and pain in the right hypochondrium, dry cough, &c. In nephritis, pain towards the lumbar region, frequent desire to make water, red urine, scorching as it passes, and sometimes purely aqueous, &c.

These phlegmasiæ exhibit also other phænomena, which depend on the correspondence of the affected viscera with parts more or less distant :

distant : such as headach, dark red colour of one or both cheeks, in peripneumony ; oppression, hiccup, vomiting, &c. in hepatitis ; numbness of the leg, retraction of the testicle, and convulsions, during nephritis.

The general phænomena, however, are always the same : febrile excitement with a quick, hard pulse, universal heat, ardent thirst. Three very distinct periods are observed : 1st, Fixed irritation in the part, new mode of action, afflux of fluids ; heat, pain, intumescence with renitent hardness, gradual increase of the disease. 2d, All the symptoms at the highest degree, the resolution is always marked by a gradual diminution of pain, heat, &c. combined, for the most part, with an excretion of a peculiar character, or a painful shooting in the part, the prelude to or rather the labour of suppuration. At the third period the phænomena of suppuration are established.

This suppuration gives rise to ulcers always exceedingly troublesome in the interior organs ; in some individuals of a strong robust constitution they may cicatrize ; but, for the most part, they produce chronic affections, which lead slowly to a state of consumption.

In the last place, the phænomena of gangrenous termination are every where the same : a sudden

sudden cessation of pain, weakness and depression of the pulse; speedy prostration of strength, debility, dejection, shrinking of the visage, &c. these symptoms, in all cases, announce approaching death.

PHLEGMASIÆ OF THE MUCOUS MEMBRANES.

28. NOTHING is more common than phlegmasiæ of the mucous membrane of the nostrils (cold in the nose, *coryza*). This affection is often produced by passing suddenly, in any manner whatever, from a warm temperature to one much colder. It takes place, in particular, when people suffer wet clothes to become dry on their bodies.

This malady announces itself by an irritation in the sides of the nasal fossæ; the habitual secretion of the membrane by which they are lined decreases, and is soon entirely suspended; the patient experiences a sensation of ardor, dryness, and plenitude in the nostrils, with a difficulty or impossibility of breathing through them; he speaks through the nose, and the sense of smelling becomes exceedingly weak. The olfactory membrane being thickened, produces a sensation of pricking, frequent sneezing, and a continual desire of blowing the nose, but without effect. The patient experiences a dull, tense pain, with a sensation of heaviness towards the frontal sinuses. These symptoms gradually increase, and are soon followed

ed by a discharge, not very abundant, of a limpid and highly irritant serosity, which produces redness, heat, smarting, and sometimes excoriation at the extremity of the nose and in the lip.

At length, the symptoms are gradually moderated; the mucus becomes thicker and less acrid; is white and opaque, and at last resumes its natural character. This affection, always very irregular in its progress, but more or less rapid, is generally circumscribed within the space of from five to ten days.

29. Sometimes the disease fixes its seat on the interior membrane of the trachea and the bronchiæ. In this case, the patient experiences in these parts a sensation of dryness; a titillation which excites a cough, at first dry and always painful: some symptoms of general derangement also take place.

The pain is particularly fixed in one point of the ærian passages, which corresponds to the larynx, or behind the sternum, and which sometimes is profoundly seated in the breast: in this case it is greatly increased by coughing and by inspiration.

The patient often experiences oppression; a great difficulty in making the air reach the extremities of the bronchiæ, on account no doubt of their great sensibility, and the swelling of their interior

terior membrane. An expectoration of a matter at first viscid and highly irritant, which excites and maintains cough, and which is sometimes striated with blood, then takes place: this matter gradually thickens, and becomes milder.

At length the symptoms, which have gradually decreased, disappear entirely, when the expectorated matter, white, thick, and sometimes puriform, is easily expelled by a cough no longer fatiguing. This affection, distinguished by the name of *a cold*, is exceedingly variable in its duration.

30. The interior part of the mouth is often the seat of a similar affection, which occupies the whole of it, or is confined only to some parts. It announces itself by swelling, redness, a sensation of dryness and smarting ardor; the patient experiences a disagreeable pricking in the place affected, and sometimes an acute pain on its being touched, either by the tongue, the teeth, or the aliments. The irritation, in general, extends to the salivary glands, which become swelled, forming a protuberance, sometimes very painful to the touch, towards the angles of the jaw.

At the end of a certain time the mouth becomes moist, and is filled with a ropy mucous matter, which gradually thickens. At this period, small excoriations (aphthæ), the result of an exfoliation of the epidermis which covers the mu-

cous membrane, is sometimes observed in certain parts of the mouth, or of the tongue. At length the affection disappears, after passing through, in a period which in general is pretty long, stages perfectly similar to those of the preceding diseases.
Catarrh of the mouth.

31. If the affection attacks the membranes of the throat and of the back part of the mouth, the patient first experiences a sensation of ardor and tension, with dryness and asperity in the throat, and a contraction in that part; he even experiences pain in swallowing his saliva. When the irritation has extended to the membranes of the larynx, he cannot breathe freely, and is subject to a cough more or less frequent: this irritation is propagated sometimes through the guttural conduits, as far as the interior part of the ears.

The parts affected are of a bright red colour, and swelled: when pressed externally they are often painful: it frequently happens that the disease confines itself to one side, and seems to be checked by the median line.

At the end of a short period there is an excretion of a mucous matter, at first clear and acrid, which gradually thickens, and becomes more abundant and milder. The swelling and redness decrease in the same proportion; and the parts at length return to their natural state. *Angina.*

32. In other cases, the irritation fixes itself particularly

ticularly in the mucous membrane of the intestines. The symptoms then are: wandering pains in the abdomen, characterized by a sensation of pressure, tension, twitching, and pinching in the intestines. These pains, more or less acute, traverse in a continued manner several of the intestinal circumvolutions or curvatures. A rumbling noise (*borborygmus*), which as well as the pain seems to arise from the progression of gaseous substances in the canal, is frequently heard. These symptoms, which proceed for the most part by very short paroxysms, more or less repeated, occasion sometimes very speedily a general weakness, and often the presensation of an approaching syncope. A looseness, which seems to give relief, then comes on: soon after the pains are renewed, the stools become progressively more frequent, and are always liquid: at length the symptoms subside, the stools are rarer, and thicker, and health is restored more or less completely.

33. A similar irritation in the conjunctive membrane produces at first a sensation of ardor, with pricking, tension, dryness, and difficulty in the motion of the ball of the eye. The afflux of blood dilates the sanguiferous vessels, and seems to fill with a red injection those which, in their usual state, receive only diaphanous liquids. The conjunctive membrane swells, and becomes red.

The irritation is propagated as far as the lacrymal gland; the secretion of this organ is increased, and changes its nature; the tears irritate the edges of the eyelids, and sometimes even the cheeks. The eye acquires extreme sensibility; it cannot endure the light, and the eye-lids remain shut.

After the symptoms have thus progressively increased, they remain some time in the same state, and then gradually decrease. The swelling, redness, and effusion of tears subside; sometimes a gentle excretion of a thick matter takes place towards the edge of the eye-lids; and every thing at length returns to its natural state.

34.. Phlegmasiæ of the mucous membranes, which line the different pneumo-gastric organs, are, in general, only slight indispositions; and often seem to be suspended by the natural resistance of a constitution little disposed for mucous affection. In the commencement of their attack, they are frequently interrupted by means capable of producing a gentle and general transpiration, such as hot liquors, a warm bed, &c.

It is almost always possible to check these phlegmasiæ at their commencement by the impression of a perturbing movement, communicated either to the organ affected, or to a part which has a sympathetic correspondence with it, by means of emetics, vesicatories, continued friction, &c.

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Sometimes the affection, when slight, confines itself to local symptoms; but very often its intensity produces a derangement in the whole œconomy, as may be judged from the general symptoms by which it is accompanied. Thus heaviness in the head, hebetude in the intellectual operations, general lassitude, a sensation as if the limbs were bruised, a decrease or total loss of appetite, loathing, &c. take place. Sometimes the attack of the disease is marked by shivering, with alternations of heat, and these are followed by acceleration of the pulse, headache, want of sleep, &c. Similar paroxysms come on every evening and night, during the first, and a part of the second period; but they always disappear when the symptoms decrease, and when the secretions become mild, thick, and abundant.

These diseases, when left to themselves, always terminate favourably: in persons, however, enfeebled by debilitants, or the too long use of aqueous beverages, the latter period may continue an indefinite time. A slight degree of irritation maintains, as if by habit, the thickening of the membrane, the afflux of liquids, and a secretion which in the end exhausts the patient. Hence there come on chronic catarrhs of the bronchiæ, which at length conduct to phthisis; habitual ophthalmiæ, &c. All these secondary affections arise from a general debility, or a peculiar weak-

ness of the diseased organ ; and to prevent these, it will be proper to make use of aromatics and other corroborants at the third period of the disease.

Sometimes, after these affections, especially if they have been obstinate, and have often recurred, the membrane retains a certain degree of thickness. Thus small red permanent striæ, arising from a varicose state of the blood-vessels, are observed in the conjunctive membrane, and sometimes opake and whitish spots in the cornea. On the nasal membrane there arise fungous excrescences of greater or less consistence, and which sometimes terminate in ulceration (*mucous or carcinomatous polypes, ulcers, ozænæ, &c.*). In the pharynx there often remain a certain difficulty of deglutition ; a constriction of the throat, which proceeds from the thickening of the mucous membrane ; and sometimes even a swelling with an induration of the tonsillæ.

These affections for the most part leave behind them a peculiar disposition, a sort of aptitude for readily contracting them again ; and after several successive attacks, especially in the same point, the affection fixes itself in an invariable manner, and is perpetuated by the force of habit.

35. In aquatic and marshy countries, during damp seasons, and sudden variations of the temperature, all these diseases often assume an epidemic character.

Coryza,

Coryza, ophthalmiæ, sore throats, catarrhs of the breast, dysenteries, &c. are then indiscriminately observed; the same individual very frequently experiences many of them in succession; and we have the histories of some epidemiæ in which almost all the mucous membranes were affected.

Affections of the mucous membranes, when epidemic, exhibit in general a more serious character. In this case they are for the most part accompanied with a sort of weakness, a state of general adynamia, which often renders them complicated and exceedingly troublesome.

As these epidemiæ are very interesting, on account of the ravage which they occasion, we shall give the history of those which are best known.

36. *Anginæ*. Catarrhal angina very often presents itself with symptoms of gastric derangement, acute pain in the head, redness of the face, sensibility to the touch in the epigastrium, sensation of fulness in the stomach, eructation of bitter matter, nausea, vomiting, loss of appetite, bitterness in the mouth, yellowish crust of greater or less thickness on the tongue. In the commencement, the impression of a shock on the stomach is often sufficient to remove the gastric symptoms, and sometimes the disease itself.

But the most troublesome case is that where the
angina

angina exhibits striking characters of *adynamia*. The attack of the disease is then commonly announced by shivering, with alternations of heat and cold, severe pains in the head; the eyes are dull, reddish, and watery; the visage is full, red, and puffed up, sometimes pale and sad. The patient experiences a soreness in the throat, with hoarseness, a small cough, pain in the stomach, vomiting, and frequent stools. The last-mentioned symptom occurs in particular in children. Great dejection is observed in the patient, with sudden weakness, and frequent syncope. He labours under great oppression, the pulse is quick, small and tremulous, with exacerbation in the evening and at night, during the whole course of the disease.

Soon after, there comes on a painful swelling in the fauces, the tonsillæ, and sometimes the parotid and maxillary glands. The throat assumes a shining bright red or crimson colour, very often interspersed with whitish or ash-coloured spots, which rapidly extend. The breath then becomes highly fetid, and in some hours insupportable even to the patient; towards the second or third day deglutition is exceedingly difficult, the voice is hoarse, and even accompanied with a sort of rattling. The patient experiences pain in the head, confusion and heaviness, want of sleep, anxiety, and sometimes phrensy; at other times mere stupor

stupor and starting, uttering a few interrupted words.

On the fourth or fifth day an expectoration of a mucous, sanguinolent, livid, and exceedingly fetid matter sometimes takes place; sometimes also, especially in children, a discharge from the nostrils of a sanious liquid, which corrodes the lips and the cheeks, with continual sneezing, the sudden cessation of which always announces death: sometimes, notwithstanding these symptoms, deglutition remains still easy.

The essential symptoms of this malady are as follow: small, frequent, and unequal pulse; sudden decrease of physical strength and of the intellectual faculties; anxiety, continual sighing, great oppression towards the hypochondria; heavy, watery, dull eyes; fetid breath; pain in the back part of the mouth; shining crimson colour of the fauces, with white or ash-coloured pustules or spots; efflorescence on different parts of the body, &c. When opened after death, gangrenous spots are found in the throat, in the bronchiæ, and on the intestines, with excoriation of the mucous membrane.

This disease terminates favourably when the following characters are observed about the third or fourth day: gentle sweat, pulse stronger and equal, successive falling of the sloughs, leaving the ulcers
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of a bright colour, respiration freer, the eyes less dull, urine turbid with a farinaceous sediment, abundant expectoration, very extensive desquamation from the skin.

This affection sometimes produces death in two or three days, with symptoms of peripneumony, phrensy, apoplexy, &c. In general, the disease attains to its highest period on the fifth or sixth day, but sometimes, and particularly in old persons, not till the eleventh or twelfth. The signs of approaching death are : shivering, followed by a shrinking or lividity of the skin; small and frequent pulse, deadness of the eyes, pale limpid urine, cold clammy sweat, hiccup, rattling in the throat; fetid, livid, involuntary stools; the visage sometimes puffed up and shining as if oily, swelling of the neck, general œdema, &c.

37. Angina exhibits remarkable varieties, according to the parts which are its principal seat.

Thus, when the passage of the aliments, drink, and saliva, through the gullet occasions much pain; when this part produces an abundant excretion; when an acute pain is propagated as far as the ears, with crepitation towards that part during deglutition; when the throat, on inspection, exhibits a swelling of the tonsillæ and of the velum palati; in a word, if excretion becomes abundant at the
second

second period, the affection has its principal seat in the tonsillary glands. *Angina tonsillaris*.

38. When the malady affects the pharynx respiration is easy, deglutition painful or impossible, and the aliments return through the nose: there is a swelling and redness in the bottom of the back part of the mouth. *Angina pharyngea*.

39. When the affection extends along the tracheal artery, the patient, without exhibiting any exterior symptoms, experiences heat in that part: the voice is sharp and hissing, respiration is painful and short, and he experiences a strong sense of suffocation. *Angina trachealis*.

40. In the last place, when along with the preceding symptoms the pain is exceedingly acute when the larynx is moved by speaking and deglutition, when the voice is very weak, the words short and uttered with difficulty, the larynx is affected. *Angina laryngea*.

The two last varieties, which are the most terrible, exhibit no external symptoms. It may be readily conceived that when the phlegmasic irritation is very great, it may extend, at the same time, to several of the regions before mentioned.

41. One kind of angina laryngea, exceedingly troublesome,

troublesome, is almost exclusively peculiar to children ; it is very common, and as it were endemial, on the coasts of Scotland, and in certain parts of Sweden. It has appeared sometimes in England, Italy, Holland, and Germany : it always affects several individuals in the places where it prevails, and has often proved exceedingly fatal.

This affection, besides the general characters of catarrhal angina, has symptoms peculiar to itself. Thus respiration, difficult and profound, is performed with a peculiar noise, which may be compared to the cackling of geese, and which sometimes is heard only in the effort to cough.

The progress of the disease is exceedingly rapid, respiration becomes convulsive, the mouth remains open, the neck is lengthened, the larynx rises up, and yet deglutition is not impeded.

The patient exhibits great dejection ; the pulse is weak, frequent, and intermittent. Sometimes the symptoms become suddenly milder ; the child sports, walks about, and in two minutes is suffocated by a new exacerbation. At other times the disease follows a uniform progress, and the child dies with the full use of its intellectual faculties and functions. The patient is in general cured, when it can reject through the mouth a large quantity of mucous matter or membrane-like concretions.

The disease exhibits nothing constant, either in
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its progress or duration; death often takes place on the second, third, or fourth day; it has even happened on the eighteenth. The cure is sometimes retarded for several weeks.

After death, the visage is swelled and livid, the eyes project, and are turgid, &c. as in the case of suffocation. Some traces of phlegmasia are found, but rarely, in the back part of the mouth and the pharynx. The larynx is lined by a membrane-like crust, which extends a great way into the bronchiæ: this false membrane is sometimes very thin; at others it fills the trachea almost exactly; and in this cavity it is, for the most part, of such a consistence, that it can be removed entire in the form of a tube; but along the bronchiæ it commonly has the form of a whitish, flabby pulp. This false membrane seems to be merely the result of a lymphatic exudation, which has assumed a concrete form on the sides of the ærian canal.

The healing means recommended for this variety of angina, and for all the others, are: those which tend directly to diminish the intensity of the local phlegmasia, and those capable of producing a perturbing movement, a strong and continued action on the organ affected, or on the surrounding parts: such as the application of leeches, scarification, and emetics; and in the second period strong stimulants, as emetics, vinegar of squills, kermes,

kermes, the long continued inspiration of sulphuric ether, &c.

42. Pulmonary catarrh is sometimes accompanied with an embarrassment in the gastro-hepatic system, but rarely with a real bilious fever. In this case, an emetic makes the gastric symptoms speedily disappear, if it does not entirely remove the disease. This complication constitutes the character of *pleurifies*, or *gastric peripneumonies*, of which Stoll has traced out the history in the first part of his *Ratio Medendi*.

43. Pulmonary catarrh is much more troublesome when a real adynamia speedily ensues, as was the case in the epidemic disease observed by Hoffmann in 1728. It announces itself by great languor, with a heaviness of the head, loss of appetite, and nausea; the pulse weak and frequent. The patient experiences fits of shivering followed by heat; great uneasiness in the chest, with cough, coryza, &c. Towards the fourth day the oppression becomes very great, and is accompanied with anxiety, extreme weakness, and delirium. On the seventh day petechial miliary eruptions appear. The disease terminates favourably when a gentle sweat comes on about the seventh day, and a diarrhoea on the fifth or tenth; but if transpiration
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tion is abundant in the beginning; if the exanthema is not followed by remission; if the urine deposits no sediment; if the costiveness is permanent; and if the skin be dry, without any thirst, the agitation increases, convulsions with hiccup soon come on, and death speedily ensues.

44. The breast also is subject to a disease, generally epidemic, which affects the individual only once, and which comes on, for the most part, in infancy.

It generally begins like a common cold; but towards the fifteenth or twentieth day the cough assumes a convulsive character, which consists in rapid and successive movements of expiration, with a peculiar noise suddenly followed by a complete inspiration. This cough is sometimes so violent and so precipitate, that the child seems ready to be suffocated; it continues in this manner till a mucous expectoration, or even vomiting, comes on; after which it ceases for some time.

This expectoration takes place, in general, after the effort to cough which follows the second sonorous inspiration. Sometimes there is none. At first the child does not expectorate, or throws up only limpid mucus; the paroxysms are then more violent, and of longer duration; but they afterwards become shorter, as expectoration is more abundant and easier.

After the cough, respiration is sometimes quick, and a sensation of fatigue, which continues a longer or shorter time, remains; but the children, in general, return to their play.

In certain cases, the paroxysms seem to be excited by violent exercise; excess of food; the inspiration of air charged with dust, smoke, strong odours, and particularly by all violent mental affections. They are often renewed without any apparent cause.

The intervals of tranquillity are exceedingly variable, and the return of the paroxysms is more frequent in the night-time than during the day. When the patient feels a new paroxysm coming on, he generally takes strong hold of any thing near him, or desires some one to support him. This affection continues from one to three months, sometimes more, and exhibits great varieties.

During the violent paroxysms, the face becomes turgid and red. At other times a hæmorrhagy from the nose, the ears, or even the eyes, takes place. Sometimes fever comes on, even at the commencement, but oftener at the end of some time: to a certain degree it is continued, but increases in the night-time (*catarrh*).

The disease, in general, is more dangerous and oftener proves mortal below the age of two years: it is exceedingly troublesome in weak children born of phthical or asthmatic parents, especially when

when there is no expectoration, and when the cough is very violent, with a great difficulty of respiration.

On the other hand, there is no danger when the paroxysms are neither frequent nor violent; when the patient, without fever, or difficulty of breathing during the intervals, sleeps well and eats well; when the paroxysms, followed by vomiting, produce an extraordinary appetite, &c.: in the last place, a moderate nasal hæmorrhagy is, in general, a favourable symptom.

This disease is produced by a convulsive movement of the diaphragm and the breast. It is sometimes checked, in the commencement, by irritants conveyed to the gastric system, such as purgatives, and emetics taken in such a manner as to excite vomiting, and then nausea. When it is already pretty inveterate, it seems to continue by the force of habit, which may be interrupted by any change suddenly effected and maintained in the organization; by the attack of another disease; by all violent affections: the use of tonics, and particularly cinchona, has often been successful.

45. Mucous phlegmasiæ of the intestines are for the most part epidemic, and sometimes occasion very great ravage; which renders it of great importance to study the history of them. In reading

an account of the epidemic dysenteries observed by Zimmermann, Pringle, Vagler, &c. it is seen that this disease assumes peculiar characters, according to the degree of adynamia which accompanies it, and to the peculiar affection of some organs with which it is combined.

The simplest is particularly prevalent towards the end of summer, when the strong heats are succeeded by rains, with great variations in the state of the atmosphere, and a very striking contrast between the heat of the day and the coolness of the night. It generally takes place after a sudden or strong impression of cold, long continued, especially on the feet or legs; after sleeping a night on the damp ground; in persons who have a particular predisposition for it, and perhaps a state of debility in the intestinal system, an effect commonly produced by the great heats of summer, and sometimes also by the immoderate use of fruits.

Some days before its attack, the patient complains of general lassitude, a sensation in the limbs and towards the loins as if bruised, with a heaviness of body and mind; diminution or total loss of appetite, loathing, slight sensation of cold, or wandering and transient shiverings: sometimes real catarrhal affections come on, such as ophthalmia, coryza, sore throat, diarrhœa, &c.

The disease, at length, announces itself by a
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more apparent shivering, interrupted by flushes of heat, with nausea or vomiting. The patient experiences, at the same time, a very painful constriction towards the epigastrium, gripes, or a painful sensation of tension, twitching, and twisting in the intestines; flatulencies in the abdomen, with a rumbling of the guts; sometimes the costiveness is obstinate, and there afterwards comes on a frequent but ineffectual desire to go to stool; the patient makes violent efforts to gratify this want, and it then appears as if all the viscera had descended towards the anus; sometimes the rectum is inverted and hangs down. The patient experiences a sharp, scorching heat towards the sacrum, and a constriction of the anus with the impossibility of introducing a syringe.

At the end of some days a little relaxation takes place in the rectum; the stools, at first small in quantity, but very frequent, are liquid, spumous, and more or less turbid, like the water in which meat has been washed; streaked with blood, and sometimes entirely sanguinolent; sometimes they are so acrid that the circumference of the anus is inflamed or even excoriated. These evacuations always succeed a paroxysm of very violent pains in the bowels, which they for a moment mitigate. There always exists in the colon a certain kind of constriction.

By little and little the stools become more

abundant, as well as thicker, and the symptoms decrease in the same proportion. A long time after the patient experiences, towards the rectum, an uneasy sensation, which seems to arise from the presence of the fæces ready to be protruded. The pains in the belly become more moderate, and return only at long intervals; the disease gradually changes into a simple diarrhœa; the excretions, still frequent and copious, at length gradually resume their natural character; and the cure is generally completed on the twentieth, twenty-fifth, or thirtieth day.

Epidemic dysenteries rarely exhibit this character of simplicity; and in general it is found only in those which attack here and there a small number of individuals. They are accompanied for the most part by gastric symptoms: of this kind is that the description of which forms the commencement of Zimmermann's Treatise.

After preliminary symptoms, very like the preceding, there comes on an universal cold, sometimes slight, and sometimes carried to such a degree as to produce tremor, interrupted by flushes of heat, anxiety, *great sensibility of the epigastrium*; very acute griping pain in the abdomen; sensible weakness, chiefly towards the dorsal and lumbar regions. After the disease has made its appearance, *the mouth becomes bitter; the tongue acquires a bright red colour, and is covered by a yellowish crust;*

crust; the patient has an ardent thirst, with nausea and bilious vomiting; the pain in the head is often insupportable; the heat universal, the pulse accelerated, with a very sensible increase in the evening and at night; loss of sleep. At the end of some days the stools, thin, mucous, and sometimes bloody, are always preceded or even followed by violent griping pains in the bowels, tenesmus exceedingly fatiguing, and ardor towards the rectum; the urine is scorching, with a continual but ineffectual desire to make water.

The same author, who has often seen these epidemic diseases in Swisserland, describes another complication more troublesome, the characteristic features of which may be found in the history of those observed by Pringle.

The commencement is marked by shivering, which several times re-appears in the course of the disease, and prostration of strength speedily takes place. The patient, regardless of his state, experiences a pressure at the pit of the stomach; heaviness in the head; sometimes an exceedingly violent cephalalgia; at times a calm delirium, with an extraordinary, thoughtful or ecstatic look; the voice becomes weak and altered; deglutition is sometimes difficult, and accompanied by vomiting, which affords no relief. The stools are either very rare, notwithstanding the continual desire, or exceedingly frequent, and in a few hours the pa-

tient seems ready to expire. The fæcal matters change their character every moment; and are green, black, tinged with blood, or entirely sanguinolent, and excessively fetid; the urine is scorching, rare or suppressed; the breath fetid, thirst excessive, and the patient has an ardent desire for strengthening beverages: the pulse is small, close, and profound; the skin, dry, arid, and corrugated, drops off in small scales; it is sometimes cold and clammy; the face becomes altered; exanthemata of different kinds, aqueous vesicles, miliary pustules, petechiæ, and vibrices, &c. appear, especially towards the hypochondria. The abdomen is distended and depressed.

External suppurations have often been followed by a cure. When the pressure of the epigastrium decreases, when the urine flows freely, and when the strength is recruited by sleep, there is reason to hope for a favourable termination.

But, if deglutition becomes difficult, and the tongue dry and black; if the abdomen remains distended, with a retraction or convexity of its sides; if hiccup takes place, with gangrenous spots on the legs or feet, and black aphthæ in the mouth; if the patient experiences frequent syncope, general dejection, coldness of the limbs, with internal heat, stupor, and slight delirium; in a word, if the stools are involuntary, and if the pains suddenly cease, the patient will soon die. On opening
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ing the body, traces of gangrene are often found in the œsophagus, the colon, and the rectum.

In certain cases, the disease assumes a more or less striking character of enteritis; as was the case in the epidemia which occasioned so much ravage in the environs of Nancy in 1734, and of which Marquet collected the history. This variety was characterized by a violent pain in the stomach and intestines, accompanied with extreme sensibility of the abdomen, which could not endure the slightest touch. The patient experienced universal heat, insatiable thirst, a burning heat from the throat to the anus; the tongue was red, dry, and sometimes blackish towards the root; the pulse hard and accelerated; the stools were frequent, in small quantity, and accompanied with excessive straining: vomiting in almost every case proved fatal: some of the patients were carried off five or six hours after the first attack. It will excite no astonishment that the disease should have been so destructive, when it is known that the only remedies employed were ipecacuanha, rhubarb, and diascordium.

In almost all the fecases of epidemic dysentery, the fever is not very apparent: weakness and dejection are extreme after the attack. In general, the disease is the less dangerous as the symptoms of reaction are more striking.

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The skin is almost always dry, dirty, and as it were scaly; the tongue is of a red colour, more or less bright: sometimes small ulcerations take place in the mouth, and the irritation extends to the whole alimentary canal.

The red colour of the stools is the consequence of a sanguinolent exudation from the ferous vessels, into which the blood is impelled by the phlegmatic turgescence: it is not observed that the disease is milder when this bloody exudation does not take place.

Sometimes the *fæcal* matters are constantly mucous; and towards the end assume a puriform opacity, as in the case of coryza, colds, &c. The filaments, pellicles, or membranous fragments, frequently observed in the stools, are the result of an albumino-gelatinous exudation, which has assumed a concrete form in the intestinal canal. It is very rarely that these portions of the epidermis separate from the mucous membrane.

The *fæcal* matters always exhale a peculiar faint odour, which at the commencement is not very disagreeable; but towards the conclusion they become insupportably acrid and fetid.

Like all catarrhal affections, the one in question, when it attains to its third period, continues sometimes very long, and tenesmus with some pains in the bowels then remains. It sometimes

times happens that the evacuations continue to be frequent and liquid, after all the other symptoms have disappeared; the diarrhœa is perpetuated by atonia of the digestive system, and by a sort of habit; and the patient, at the end of a shorter or longer time, dies of consumption.

46. If we compare the results furnished by numerous observations of dysentery, this disease may be distinguished into five principal forms:

1st. The simplest rarely occurs: it is however sometimes observed, and follows very exactly the three periods of catarrhal affections. *First period*: constriction of the anus, orgasm in the intestinal mucous membrane, frequent desire to go to stool, and at the same time costiveness. *Second period*: relaxation, excretion with a gradual diminution of the symptoms. *Third period*: cessation of the pain in the bowels, milder and thicker evacuations. *Simple dysentery*.

2d. The second announces itself by bitterness in the mouth, vomiting, pain in the epigastrium, and shivering followed by a violent universal heat; the pulse is accelerated and strong; the cephalalgia exceedingly painful, and the face red. The progress of this variety, in general, is more rapid and more acute. *Bilious dysentery*.

3d. In the third, the preliminary symptoms are
often

often very slight, and exhibit a catarrhal character and dispositions; the face is of a rosy white colour; the mouth and throat are filled with mucous matter, and in some parts excoriated; the epigastrium is sensible, and distended with flatulencies: the progress of the symptoms is exceedingly slow; they remain a long time stationary; the patient seems rather indolent than really exhausted. *Mucous dysentery of Wagler.*

4th. The fourth is characterized by very acute pains and excessive sensibility in the abdomen. The patient experiences great heat; the pulse is frequent and hard, accompanied with pain in the head, redness of the face and eyes. The severity of the symptoms is increased by vomiting exceedingly painful. *Dysentery with symptoms of enteritis.*

5th. The fifth takes place when patients are crowded together in confined places, badly aired, damp, dark, and dirty; and particularly among old persons, or individuals exhausted by fatigue, poverty, and grief. It announces itself with a sudden and extraordinary weakness, a painful constriction of the epigastrium, and great heaviness of the head. The eyes have a haggard and cadaverous appearance; the voice becomes weak; the patient is much dejected, and experiences frequent syncope; eruptions appear on the skin. It is highly

highly contagious. *Malignant dysentery of Zimmermann and Pringle.*

47. These are the principal forms and essential characters assumed by intestinal catarrh, especially when epidemic. It is then always produced by a concurrence of circumstances, which tend to weaken the general nervous action: such as humidity of the atmosphere after a long continuance of excessive heat; great fatigue; food of a bad quality or insufficient in quantity; extreme grief. It is produced, in particular, by individuals being crowded together in confined, dirty places, amidst want of every kind. It is then chiefly that it becomes contagious; it acquires this quality in consequence of the miasmata exhaled from these bodies enfeebled by wretchedness and disease. These miasmata, conveyed to the nerves of the ærian passages with the inspired air, may second the general causes of dysentery, or determine the disease directly by a mode of action analogous to that of contagious virus.

In this disease, the alimentary substances, not sufficiently influenced by the digestive action of the alimentary canal, which is too much weakened, putrefy, as they do in every other warm and moist place; a disengagement of different gases then takes place, and the stools are exceedingly fetid.

48. In

48. In the course of almost all the phlegmasiæ of the mucous, ærian, or alimentary membranes, there sometimes arise in them small pustules, or round superficial ulcers (aphthæ), of a whitish or an ash colour, as large as a grain of millet or hemp-seed, and having in the middle an aperture, which seems to be the orifice of the excretory duct of a mucous follicle. At first, when viewed with a magnifying glass, the circumference of them appears red and inflamed. A pellicle, which no doubt is the mucous membrane of the epidermis, gradually detaches itself in scales; the excoriated surface is then exceedingly sensible, and cannot bear the contact of any hard body. This epidermis, in general, is speedily renewed.

Sometimes these aphthæ appear insulated and dispersed in different parts; on the velum palati, over the whole extent of the mouth, the tongue, the gums, the interior surface of the lips, the bottom of the mouth, the œsophagus, &c.; respiration and deglutition are then exceedingly painful. Some of these aphthæ have been found, after death, in every part of the alimentary canal. Katelaer, at the time when these pellicles dropped off, observed that several patients voided large quantities of them by the mouth and the anus.

At other times, these pustules are closer, and run into each other, so as to form a sort of white, shining,

shining, dense and adherent crust, extending from the mouth to the pharynx and the œsophagus. They are sometimes of a yellow colour, or even entirely black.

This affection, first observed with great attention by Katelaer, who practised in Zealand, has been described also by Boerhaave; and was afterwards observed, in Holland, by Vanswieten, who never saw it at Vienna.

The aphthæ rarely constitute an essential malady; for the most part they accompany catarrhal affections and malignant fevers. The mucous fevers, observed by Wagler, often exhibit towards the end an aptheous eruption, with an abundant salivation.

The aphthæ generally make their appearance in damp, marshy places, where the houses are dirty and badly aired; and on indigent persons, or those who are of a weak, delicate constitution. They are often observed in hospitals for children, where the atmosphere is speedily infected by the least negligence in regard to cleanliness, and where bad nourishment disposes to great debility. In the hospital founded by Mr. Necker at Vaugirard for artificial suckling, of nearly eighty children, on whom every possible care was bestowed, twenty-two died with miliary eruptions. In the Foundling Hospital at Paris, this affection has often been seen to occasion great ravage, under the name of *muguet*, and to spread rapidly from
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the diseased child to those lying under the same curtains.

49. *Catarrhs of the genito-urinary passages.* The mucous membranes of the urethra, the vulva, and the vagina, are often attacked by a mode of irritation, the results of which are perfectly analogous to the catarrhal affections already mentioned. When these maladies are not checked in their progress, by an empiric treatment, they are observed to follow, in a regular manner, the three stages of catarrhs, and then to disappear spontaneously.

The most common cause of these diseases is the local application of a specific irritant; and this application is produced, for the most part, by coition with a person actually affected by the same disease. Its attack is manifested in a period of time which varies from a few hours to fifteen days, and sometimes more. This affection, in the male, is announced by a slight titillation at the extremity of the urethra, with redness, swelling, pain more or less acute, burning heat during the passage of the urine. At the end of three or four days there appears an exudation of a serous matter, more or less acrid. The seat of the irritation is towards the fossa navicularis, or in some points of the canal, a little more elevated. From the seventh to the tenth day the running becomes more abundant, yellow or greenish; the irritation is propagated along the urethra, towards the frænum of

the penis, and even towards the neck of the bladder; the patient experiences a sensation of constriction, and a very frequent desire with difficulty or impossibility of making water. The running is then very abundant, thicker, and less irritating; and the symptoms gradually abate. At length the excretion becomes, successively, more opaque, decreases in quantity, and completely disappears towards the thirty-fifth or fortieth day.

In females, the disease announces itself by an irritation, which at first is slight, or a sort of disagreeable itching in the vagina followed by an acute pain, with a constriction in the whole of that part; the irritation is then spread over the whole vulva, and along the urethra, with a troublesome heat in making water; a secretion gradually takes place from the sides of the vulvo-uterine conduit, and the disease then follows the same changes as in man.

Catarrh of the genito-urinary passages is often accompanied with symptoms highly varied, which depend on the peculiar degree of irritation, and on its propagation to the neighbouring parts.

The irritation is often communicated to the cavernous bodies; and the penis then swells, is bent in different directions, and becomes very painful on the slightest touch. Sometimes a painful erection, which continues so long as to produce spon-

taneously the result of venereal orgasm, comes on in the night.

In some cases, the irritation is propagated to the inguinal glands, to the prostate, or to the testicles; especially when these organs are weakened or fatigued: they then experience the usual course of phlegmonous affections. If the irritation determined to these parts be exceedingly strong or sudden, the excretion of the mucous membrane takes place with difficulty, or is speedily suspended; which has induced some to believe in a metastasis of the excreted *humour*, which is supposed to *proceed* to the glands of the groin, to *fix* itself in the prostate gland, or to *fall* into the *scrotum*, &c.: but these phænomena may be explained by considering them as the result of a very violent irritation, which removes a weaker.

It is not uncommon to see the running continue a very long time, and to perpetuate itself with the indolent character of chronic catarrhs. In this case, it is observed, that the affection has not been violent in its first state, and at the commencement of the second period; that the constitution has been too much weakened by bleeding, aqueous beverages, &c. or that the individual has before experienced the same disease several times. It is therefore almost always proper, in the third period, to recur to the use of tonics, such as the cold bath,

bath, stimulating injections, purgatives, a vesicatory, &c. These means often succeed, by deranging the habitual mode of action in the affected part.

When the urethral or vulvo-uterine excretion has passed through all its periods, and has been perpetuated by atonia of the parts, or by the force of habit, it may be observed that it loses its specific, irritant character, and rarely communicates the malady.

Sometimes this affection leaves behind it an induration of the sides of the urethra, with a constriction of the canal; or produces different fungosities.

The urethral catarrh (*blennorrhagia*) is produced, for the most part, by the immediate contact of the matter excreted from a person affected by the same disease. This blennorrhagia, called the syphilitic, lasts much longer than those which may come on spontaneously, which are excited by irritating injections, and which commonly terminate in the course of eight days*.

When a syphilitic blennorrhagia commences, it may be speedily eradicated by employing strong and continued injections to produce a *simple* blennorrhagia, which prevents the syphilitic from developing itself. This method I have always

* The reader may see, in Swediaur's Treatise on the Venereal Disease, a very curious history of an urethral catarrh, which he produced on himself by the injection of diluted ammoniac.

found successful, when I was able to employ it at a proper time and in a proper manner:

It does not appear that syphilitic blennorrhagia ever gives rise to symptoms of the pox; nor is it proved that contact of the matter produced by its secretion can occasion the formation of a chancre. It may, however, be readily conceived that the acrid and highly stimulating matter of a chancre, conveyed to the urethral canal, may, like every specific irritant, produce in that part a catarrh; but in general it produces only a chancre.

50. A mucous running from the genito-urinary passages has been observed in children of both sexes, at the time of dentition. At that period an irritation almost always takes place in the mucous membrane of the whole digestive system, which is announced by an abundant salivation and by diarrhoea.

In the epidemic observed at *Graefenthal*, the dysentery disappeared in December 1797, and was succeeded by catarrhal and rheumatic affections. At the same time several married men, and men come to years of maturity, experienced a disagreeable tickling in the glans, with painful erections, a frequent desire to make water, and a great difficulty of voiding it. The urine deposited a white, viscid, flaky, filamentous sediment. Some days after a running of a yellow, slimy, and tenacious matter took

took place from the urinary passage. The symptoms then gradually decreased, and in some days disappeared. The same disease was observed among the female sex, and in the mountains, where the venereal disease is exceedingly rare.

Several instances induce me to believe, with Hunter, that a constitutional leucorrhœa may, by coition, produce in man a simple blennorrhagia.

51. *Catarrh of the bladder* is a simple and very common disease, which however is not yet well known. It is particularly incident to men of letters, persons who are confined in offices, or sedentary old men. Buffon, Voltaire, Rousseau, Dalember, &c. were affected by it. Very often it is produced and maintained by the presence of a calculus or other foreign body. Sometimes, however, it exists without this cause; and in certain cases it seems to be connected with some old cutaneous affections. It has never been remarked but in the chronic state. This affection is attended with an habitual sensibility towards the hypogastrium, which can scarcely bear to be touched; pains more or less acute, in irregular paroxysms, with a difficulty and sometimes impossibility of voiding urine: the urine is habitually thick and slimy, and by rest deposits a slimy sediment. Mucilaginous substances, diuretic stimulants, the use of sulphureous or acidulous mineral waters, produce only a

momentary alleviation; and the disease, which is commonly of long duration, almost always terminates in death.

It is to the irritation maintained by these chronic catarrhs that we ought, no doubt, to ascribe the different alterations found after death in the sides of the bladder.

52. *Uterine catarrh.* Many females are subject to a running from the vulvo-uterine canal. It is observed sometimes towards the age of puberty, in girls of a strong make, who eat a great deal without taking proper exercise; who are strongly stimulated by venereal desires; in young widows, nuns, &c. It seems to succeed an irritation of the genital parts, or the abuse of venereal pleasures. It comes on after laborious parturition, abortion, cessation of the menstrual flux, &c. In these cases, the patients complain sometimes of considerable heat in the region of the uterus, and of pain towards the loins. The affection seems then to be purely local, and to arise from an irritation of the mucous membrane of the uterus.

But, for the most part, this running is observed in women pale, dejected, and indifferent to venereal pleasures; in a state of habitual languor and anorexia, weakened by excessive menstruations, long continued grief, and other debilitating affections.

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The matter, which at the commencement is mild, limpid, and in small quantity, occasions, at first, no inconvenience in general. The running appears only a little before and immediately after each menstrual period; in the course of time it increases both with respect to quantity and duration; the bloody evacuation decreases, in general, in the same proportion; and if menstruation ceases, it returns at times the periodicity of which is pretty regular. The general debility then increases, and pains take place towards the lumbar region; the matter afterwards exhibits different degrees of consistence, and shades of colour highly varied: it often instantaneously assumes such a character of acridity, that in coition it seems sometimes to have produced in man a simple blennorrhagia.

The disease sometimes remains in the same state during a great number of years, and, if the constitution happens to improve, spontaneously disappears. At other times it assumes a more serious character. The patients then complain of a sensation of erosion in the uterus or the vagina; they experience heat in voiding urine, and the irritation, long fixed in the interior tunic of the uterus, is often propagated throughout the whole substance of that organ, or even to those connected with it. These parts then acquire such a degree of sensibility that all the physical sensations and moral affections seem to be directed to them as to a common centre. In

certain cases, acute shooting pains come on, accompanied with insupportable pricking and heat towards the region of the uterus; the skin is habitually dry and scorching; the pulse is small and confined; a general decay then gradually takes place; sometimes palpitation and frequent syncope are observed; the intellectual functions become weak; the patient experiences the most violent emotions from the slightest causes, and exhibits a combination of all the common hysterical symptoms. The appetite and sleep are at length lost; diarrhœa, swelling of the limbs, &c. come on; and this series of sufferings and miseries is soon terminated by death.

On opening the body a certain degree of thickening is observed in some parts of the tunics of the uterus; a swelling more or less hard of the ovaria, ulcerations in these organs, &c.

It may readily be conceived that this affection is for the most part combined, either as a cause or an effect, with a general derangement of the nervous system, and a sort of universal debility. This disease has been sometimes cured, even in a very advanced state, by great changes effected in the organization; by an amelioration or reverse of fortune; by strong mental affections long continued; by agricultural occupations, and coarse nourishment, succeeding opulence, indolence, &c.

53. *General characters of catarrhal affections.*

All the catarrhal affections, the particular histories of which we have here given, exhibit general phænomena, which evidently indicate that they are affections of the same order. Hence the individual or other circumstances which seem to concur to their development are the same. Under these circumstances the disease seems, in some measure, to affect the whole mucous system; and it then exhibits varied forms, according to the part in which the irritation has its particular seat.

The parts of the mucous system which are most directly subject to atmospheric impressions, are those in particular which are attacked by epidemical catarrhs; such as the air passages, and next the alimentary canal.

The genito-urinary passages, less exposed to the direct influence of the atmosphere, are more subject to chronic catarrhs.

In some epidemix these affections occupy simultaneously, or in succession, the whole extent of the mucous system. The disease always observes a regular progress, in which three stages are distinguished: one of particular organ; another of secretion increased and changed; and the last of a gradual return to the natural state. The time in which the disease passes through these stages is exceedingly variable.

All catarrhal affections which continue, produce

duce the same state of general decay, and give rise to organic alterations of the same order: hence the parts affected exhibit, after death, swellings with induration, excrescences of different kinds, ulcerations, &c.

Sometimes these affections seem to be merely local; but, for the most part, their reaction on the whole system produces, at least during the first and a part of the second stage, a general sensation of lassitude, and heaviness in the head; towards evening, shivering, followed by a very disagreeable heat over the whole body, with thirst, and redness of the face; the pulse is moderately frequent, sleep is disturbed, and the appetite is weakened; petechial, miliary, &c. eruptions very often appear during the catarrhal fever; the febrile excitement commonly abates in the morning to re-appear in the evening and during the night, until the local irritation has sensibly decreased. In chronic catarrhs, the disease seems to be maintained by general debility of the whole system, and by the force of habit: it is aggravated by the excessive excretion which is the consequence of it.

In a word, all catarrhal affections exhibit numerous varieties, which depend on the peculiar state of the individual, and, in particular, on the character of the existing epidemic constitution. Every catarrh tends of itself to a favourable termination; and the cure is always certain when nothing

thing intervenes to derange its progress; but the case is very different if the habitual or accidental constitution of the patient makes it assume the appearance of mucous, bilious, or adynamic fever; and especially if it takes place during the prevalence of malignant diseases; for the catarrh rarely fails to participate in their character. This is evidently observed in the anginae, in pulmonary catarrh, in dysentery, &c. These affections are always simple and mild when the reigning diseases tend also to a speedy and favourable termination, unless the individual, weak and exhausted, finds himself in a real state of adynamia before he is attacked.

The treatment of simple catarrhs must be regulated according to the different stages: hence mucilaginous draughts ought to be employed in the commencement; means slightly stimulant and aromatic towards the end; with every thing that can contribute to maintain the energy of the part affected, and to make it speedily resume its natural mode of action. But if the catarrh assume a bad character, it induces the necessity of employing means almost always energetic, and which must be specially regulated according to a knowledge of the prevailing epidemia, and an attentive examination of the state of the patient's strength.

PHLEGMASIÆ OF THE WHITE FIBROUS MEMBRANES.

54. WE now proceed to examine another order of diseases which seem to have a great relation to the preceding. These diseases take place under the same circumstances; they appear in spring and in autumn, and particularly during damp weather with sudden alternations of heat and cold. They are almost always endemial, in certain marshy countries, habitually damp or covered with fogs, as is the case in some parts of England. Those who remain a short time at rest, exposed to the damp, cold night air, in some of the maritime countries, scorched during the day by the heat of the sun, are almost sure of being attacked by them. Robust people, from the age of fourteen to thirty-five, accustomed to severe labour, and who live well, are particularly subject to these affections.

They are announced by shivering or tremor, soon after followed by heat and agitation; pulse hard and accelerated, &c. These febrile symptoms generally increase towards the evening, and abate or even disappear entirely in the course of the day. In a day or two, and sometimes sooner, the patient without any previous febrile symptoms experiences a severe burning, lacerating pain in
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some parts of the body, particularly towards the articulations, in the wrists, the shoulders, and the knees. This pain shoots along the tendons, the aponeuroses, the membranous capsules, and the muscles: it becomes excessive on the least attempt to perform any motion, on the slightest external touch, and yet to the eye exhibits no alteration; but the part soon swells, becomes distended and of a shining red colour, after which the pains gradually decrease. The affection seldom confines its attack to one place. After a longer or shorter time, it generally re-appears in some very distant part, and renews the same sufferings: it has been seen to pass through all the articulations in this manner, sometimes confining itself to one side, and at each station employing a period which varies from twelve and twenty-four hours to eight or ten days. Sometimes it returns to parts already affected; at other times it attacks almost all the articulations at the same time, so that the whole body remains stiff and rigid, as if formed of one piece, subject to violent pain on the least motion. The fever goes on increasing for some days like the local symptoms, and proceeds by paroxysms, with evident remissions or even complete intermissions. It is almost always accompanied by alterations, more or less striking, in the different functions. At the end of an indeterminate number of days, the remissions generally bring on moderate sweats, which

which afford little relief; very often eruptions of the skin take place, as in febrile catarrhs: the exacerbations, however, gradually decrease as well as the pains; the patient begins to sleep a little in the night; the urine, highly coloured at first, deposits a lateritious sediment: the fever commonly ceases on the fifteenth or twenty-fifth day; or, if it returns, exhibits only slight or transient, and irregular paroxysms; but the local symptoms, though much moderated, still exist, and sometimes very long, but with a character of less mobility.

Such is the progress, in general, of acute rheumatism. But no affection perhaps is diversified with so many varied shades; for the intensity of the fever exhibits gradations which continue till it entirely ceases. The duration of the malady is circumscribed between a few days or a few months, without the febrile paroxysms however extending much beyond fifteen or twenty days. Sometimes the mobility of the local irritation is very great; at other times it never shifts till towards the end of from seven to ten days, and sometimes it is confined to only one part. When the affection attacks the articulations of the limbs, the latter circumstance is rare.

Rheumatic affections seem to have the power also of attacking the fibrous organs, covered with mucous membranes, and of combining or coming on alternately with catarrhal affections. The

rheumatism then exhibits remarkable varieties, according to the parts which it attacks.

When it reaches the ears the pains are lacerating and intolerable. In this case the affection seems to have its seat along the mucous membrane, which from the inside of the ear proceeds through the guttural conduit as far as the back part of the mouth. This disease exhibits evident characters of rheumatism by its great mobility; its cessation and sudden returns; its property of shifting itself, and of attacking different parts in succession, &c. *Otalgia*:

Odontalgia and angina often exhibit the rheumatic character. The angina, in this case, has its seat in particular in the muscular system of the larynx: hence the pain is increased by deglutition, speaking, &c.; and yet respiration remains pretty free.

Rheumatic pleurisy is very common in those atmospheric constitutions which produce catarrhal affections. It commences its attack without shivering, or with a constant and slight sensation of cold. A pungent pain comes on speedily in the side, rarely fixed and confined to one point, but extending itself between the shoulders, or over one whole side of the thorax, from which it is propagated along the hypochondria and the epigastrium. It frequently shifts from one place to another; the seat of the pain is in the external parts,
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and the point affected can neither bear to be touched, nor endure the weight of the body; respiration is little confined, and the oppression is slight. Symptoms of catarrhal affections often take place, such as cough, a mucous and sometimes bloody expectoration, &c.

The stomach, the intestines, the bladder, the uterus, &c. seem to be equally susceptible of rheumatic affection. These organs indeed, in their anatomical structure, exhibit white fibrous tissues favourable to this kind of affection. They are all composed of a muscular and aponeurotic layer, lined by a mucous membrane, and covered externally by a serous membrane.

The rheumatism then seems to have its seat, at least in a special manner, in the white fibrous tissues; such as the articular capsules, the ligaments, the aponeuroses, the tendons, the tendinous vaginae, the periosteum, &c. There is great abundance of these parts around the articulations; they are continued between the muscles, and serve to account for the severe pains which are experienced in moving.

The principal irritation is constantly established in a part which is essentially formed of white fibrous membranes. It always announces itself by a very acute sense of laceration and distension. Stoll observed, at the same time, and in different patients, megrim or cephalalgia on one side only; pains

pains in the ears and teeth; anginae, rheumatic pleurifies, general rheumatisms. The last often ran through all the articulations, shifting with the rapidity of lightning.

The swelling and redness do not always exist, the congestion formed is, for the most part, dissipated slowly by successive sweats. At that period a nasal, hæmorrhoidal, uterine, &c. hæmorrhagy is sometimes observed. In the part affected there frequently remains a weakness, or sort of palsy, which can be removed only by time and exercise.

After the febrile symptoms have ceased, the pain and swelling sometimes fix themselves in one articulation, and particularly in that which has been most affected. This circumstance is observed, in particular, when the disease seems to have been continued by the too long use of debilitants; by emollient topics, by the application and continuance of a vesicatory on the affected articulation, &c. The swelling then exists without redness, or pain when in the state of rest. The part fallen into a sort of atonia seems incapable of effecting a resorption of the accumulated fluids, and becomes the centre of a slight irritation, which continually promotes a new congestion. In this case, the use of stimulating tonics, such as dry, aromatic, ammoniacal, &c. friction, is attended with striking success.

But if the disease continues to make progress,

the articulation becomes exceedingly voluminous, hard, distended, and indolent. At the end of a certain period, in general very long, symptoms similar to those of phlegmon take place in one or more points; heat, acute and shooting pain, with some febrile symptoms. The skin gradually assumes a blueish or violet colour; its tissue becomes thin, and by rupture it suffers to escape a serous, sanious, turbid liquor of different colours.

The patient, incessantly tormented by local pains, soon loses his appetite; complains of thirst and continual heat; his pulse becomes frequent and weak; and a diarrhœa brings on a rapid decay, and at length death.

On opening the body, all the parts of the articulation, altered in their tissue, exhibit a mass the consistence of which varies from that of lard to the consistence of cartilage; collections of gelatinous matter are sometimes observed in the interstices between the solid parts, and often sanious, brownish liquids, similar to that which has been evacuated. Sometimes the bones appear as if pounded, and reduced to fragments, amidst a liquid or pulp of different colours. When it has been possible to examine these parts much sooner, either after the death of the patient or the amputation of the limb, it has been seen that the swelling arose sometimes from the effusion of a mucosogelatinous matter between the aponeurotic laminæ,
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in the tendinous capsules, &c.; sometimes from an inspissation of all the white parts, which had assumed the consistence of soft cartilage, &c. These parts were sometimes separate and distinct, or united into one mass, &c.

These white and indolent tumours, which are most common in the knees, are not always the consequences of rheumatism; they often take place after violent contusions of the articulations: but those who analyse the series of phænomena which come on, will soon perceive a phlegmonous irritation developed in the cellular tissue of the skin, and a rheumatic irritation in the subjacent fibrous tissues. Very often a speedy resolution of the phlegmon is effected; but the albumino-gelatinous congestion goes on gradually increasing in the white fibrous tissues, and the affection then enters exactly into the case of the preceding.

Dr. Kirkland observed one kind of rheumatism which exhibits a peculiar mode of termination; it comes on after an impression from cold, and announces itself by a slight shivering, a continued fever, and profound pains in different parts of the body.

Sometimes an erysipelatous efflorescence appears on the parts profoundly affected, with a slight swelling, and impotence of the affected limb, without very severe pain when touched: the fever and efflorescence gradually disappear.

At the end of some weeks, however, congestions not very prominent, which manifest themselves to the touch by a sort of fluctuation, take place, and on being opened discharge a small quantity of a lymphatic fluid. Several congestions of the like kind are formed in other parts, and always above or below some of the ligamentous or muscular membranes. The patient, after a period which is sometimes very long, dies exhausted and of marasmus. Kirkland, however, sometimes saw the ulcers cicatrize, and a cure to be effected, when the number of the congestions was not very considerable; but the disease was always exceedingly tedious.

The *beriberia* of Bontius, and the strokes of the moon, mentioned by Dupont, seem to have a great analogy to *acute rheumatism*.

55. A striking analogy here brings to our recollection the history of an affection, generally habitual, and always regularly intermittent, which sometimes succeeds one or more attacks of the rheumatism; which, in certain cases, is evidently produced by the alteration of some part, and which in others cannot, as appears, be referred to any appreciable cause.

This affection announces itself by pains, sometimes acute and lacerating, in some of the articular regions, such as the wrists, the shoulders, the back,

back, the knees, and the loins. It shows itself sometimes in one part and sometimes in another, or always re-appears in the same place. It manifests itself chiefly during cold, damp, gloomy weather accompanied by a west wind. Sometimes it comes on regularly every evening, or during the night, and disappears when the state of the atmosphere occasions great heat and drought : it is constantly less violent in the day-time. The pain always has its seat in the parts abundantly provided with white fibrous organs; in several cases it appears to be fixed in the tunic of a trunk or of the branch of a nerve, from which it is often propagated to the extremity of the nervous ramifications, passing over them simultaneously or in succession, and sometimes with the rapidity of lightning*. Each paroxysm of this affection often begins by a sensation of torpor or pricking, which soon produces shooting or twitching; and is itself composed of small and very short paroxysms, which rapidly succeed each other, without much apparent redness, heat, or swelling in the part. The pulse, in general, exhibits no remarkable alteration. The local irritation, however, sometimes produces shivering, convulsive agitations, automatic movements which degenerate into habit. A momentary swelling of the veins; a stronger and more frequent pulsation in the arteries of the

* See the *Talieu des Neuralgies* of C. Chaussier.

part; a change in its habitual secretion, are observed; and if the paroxysms are prolonged or are frequently repeated, they bring on a perceptible diminution in the volume of the affected part, either by the want of nutritive secretion or the diminution of exercise.

This disease, which of itself never proves mortal, is very troublesome by the intensity of the pains, their obstinacy in certain cases, and the frequency of their return. But, if the paroxysms are pretty long, or often repeated, interruption of sleep, loss of appetite, derangement in the functions of digestion, of secretion, &c. sometimes bring on atrophica, hemiplegia, a flabby swelling of the inferior limbs, universal extenuation, and at last death. *Chronic rheumatism.*

In an affection which may arise from causes so varied, and often unknown, it is impossible to say any thing certain with respect to the means of cure. But as this disease proceeds for the most part from habitual weakness, and from a sort of exalted irritability, the physician in general ought to depend most on the means proper for strengthening either the affected part or the whole system, and for suspending the excitability by producing an irritation of another kind in the same part, or in some other which corresponds with it sympathetically.

56. There is still another disease, which in a
great

great many points of view approaches the preceding, but which differs essentially from it in its general progress. Like the rheumatism, it appears to have its special seat in the parts provided with fibrous tissues: in its course it exhibits very extraordinary peculiarities; and on this account its causes and nature are still little known. A history of it may be seen in the works of Cullen, who has traced it out with that truth and precision which are found in all his descriptions. This disease commences by paroxysms, and for the most part attacks the feet: it frequently announces itself by wandering pains, repeated cramp, and a sort of numbness or shivering in the legs. It is often preceded, for some time, by a general indisposition, loss of appetite, loathing, and a pain in the epigastrium. Sometimes the paroxysms suddenly manifest themselves without any previous symptoms.

If the patient has experienced any gastric derangement, he is commonly seized, all of a sudden, with an extraordinary appetite during the day, and in the evening or middle of the night with a violent shivering; soon after which he experiences a pain in the foot, frequently in the articulation of the first phalanx of the great toe. In proportion as the pain increases the shivering abates, and is soon succeeded by an ardent heat.

The pain and fever continue in this manner, with repeated exacerbation, until the following
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night,

night. At this period the symptoms gradually decrease; a gentle and universal sweat comes on, and the patient can enjoy a little sleep.

In the morning after the second night, the part affected appears to be slightly swelled and red, and becomes painful when touched or during motion. These symptoms continue for several days. The patient every evening, and often during the whole night, experiences an exacerbation of the pains and fever. This series of phenomena then gradually decreases; the swelling and pain subside; the fever ceases; and at the end of four or five days the patient finds himself in a state of perfect health, and feels nothing of the general indisposition which preceded the disease. Such is the most *regular* progress of a fit of the *gout*.

The first fits of the gout are generally very short, and do not return for several years; but in proportion as they increase in number it is observed that their intermissions become shorter: they appear every spring with pains more acute and of longer duration; and they thus continue to come on more frequently, so as to attack the patient several times in the same season; the paroxysms then begin to be more violent, and continue longer. At length the patient is subject to almost continual torture, and experiences no material relief from his sufferings but during part of the summer and autumn.

When the fits have thus become very frequent,
they

they exhibit great variety in their progress. The gout, which at first attacked only one foot, attacks both, either simultaneously or alternately. Sometimes the part already affected becomes so again. The disease often ceases in the feet, and suddenly makes its appearance in the hands, where it exhibits the same series of phænomena : when of long standing, it will be found to have successively affected almost all the small articulations of the limbs.

In the first paroxysms of the gout the swelling of the parts is of short continuance, and leaves no restraint in the articular motions; but in proportion as the paroxysms are repeated the weakness and rigidity increase: the articulation is no longer able to perform its habitual motion, and retains a sort of ancylosis. At length, when the disease becomes of long standing, and in some particular cases, there is secreted from the affected articulations an osseous juice, which acquires solidity, and forms nodosities sometimes of considerable size. These tophi, which are phosphate of lime, confine the motion of the parts, and sometimes render the feet and hands deformed and impotent.

Berthollet observes that during fits of the gout the urine no longer contains free phosphoric acid.

It is not uncommon to see fits of the gout come on alternately with symptoms of nephritis, similar to those occasioned by the presence of cal-

culi in the kidneys. This observation, compared with that of Berthollet, renders both more worthy of attention.

When the disease is of long standing, it no longer confines itself to the articulations, and seems to have become constitutional; it spreads itself in a uniform manner to all the parts proper for receiving it, and appears in all the large systems of the interior organs, exhibiting varied symptoms, which come on alternately with arthritic pains, or which seem to succeed them.

Sometimes the derangement is very striking in the system of digestion; in which case the individual experiences loss of appetite, belching, vomiting, a painful sensation at the stomach. These symptoms come on alternately, or coincide with crampish affections or wandering pains in the limbs. When the gouty affection of the gastric system continues very long, it often produces symptoms of hypochondriasis more or less striking.

At other times the gout makes its appearance in a part of the urinary organs, particularly in the neck of the bladder, and produces a suppression of urine: in a word, it may affect different parts of the breast or the head; it then occasions palpitation of the heart and syncope, with difficulty of respiration, pains in the head, vertigo, &c.

In some cases a paroxysm of the gout manifests itself, as usual, by pain and swelling in one of the
arti-

articulations, and, instead of terminating in a progressive manner, suddenly ceases: it is observed, at the same time, that the affection develops itself in an interior organ, and particularly towards the stomach or the neck of the bladder.

The gout makes its appearance particularly in the spring; more rarely in summer than during winter and autumn. This disease seems often to be hereditary; it is more frequent among men than among women. It is observed, in general, among robust persons loaded with obesity, who eat a great deal and take little exercise; in those who use to excess fermented liquors and the pleasures of love; who suddenly give over their habitual labours; and in those who exhaust themselves by continually sitting up late at night. It is the disease of literary men, and rarely comes on before the age of thirty-five or forty.

Sometimes one or two fits of the gout come on, and never again appear; but when the fits have been frequently repeated, there is established a gouty habit, which it is very difficult to remove.

It appears that the gout is sometimes cured by great changes effected in the organization; by a reverse of fortune, which obliges the patient to pass from a life of indolence and opulence to continual exercise and coarser nourishment, &c.

PHLEGMASIÆ OF THE BONES.

57. **W**HEN a bone receives a smart blow, or is bent so suddenly that it has not time to yield, a fracture is the consequence. The signs of a fracture are : a shortening of the part, increase of its thickness, a change in its direction ; flexibility in a place before inflexible ; mobility of the two fragments one against the other, with a crepitation sensible to the touch, and sometimes to the ear. A fracture may be known also by the difficulty which the person experiences in making the least motion ; by the pain which accompanies it, and by several other signs, which depend on the form, the position and uses of the fractured bone.

A gradual development of the general symptoms of phlegmon is observed in the soft parts which have been lacerated or torn, and sometimes a general febrile excitement. Exact reduction of the fragments, rest, moderate compression, the local use of slight stimulants, and sometimes bleeding, are sufficient to produce a speedy resolution of the phlegmonous swelling.

Towards the tenth or twelfth day, a swelling, more or less voluminous, unequal, and which sometimes assumes a deformed appearance, is discovered

covered through the flesh in the place of the fracture. From the twenty-fifth to the thirtieth day the bone recovers its full strength, and the place of the fracture is no longer known but by a ring more or less salient and rough, which soon disappears, but which may be almost ever after felt through the soft parts.

According to anatomical observations and experiments made on living animals, a bone in uniting exhibits the following phænomena: During the first days there oozes from its two ends, and from the soft parts, which have been irritated or lacerated, a liquid first bloody and then serous, the resolution of which is pretty soon effected. At a certain period the fractured extremities are covered and united by a soft reddish substance, which afterwards assumes the appearance and consistence of a cartilage: this cartilaginous substance folds itself back on the exterior surface of the bone, and penetrates to its medullary substance. It soon acquires solidity; and the progress of its ossification, in animals fed with madder, may in some measure be traced by the eye.

The solid *callus*, when it expands freely, is exceedingly voluminous, unequal, and covered with asperities; but if formed under a gentle compression it is smoother and less prominent. In general, the callosity fills the medullary cavity,
and

and interrupts its continuity, which however is re-established in the course of time, at least in part.

The progress of a simple wound which unites without suppuration is here evidently perceived. The fracture becomes the stimulus which excites the vital action of the bone, and increases its sensibility: pain and swelling take place, and there is produced a parenchyma, an apparent ramification, which causes the parts in contact to adhere, as is the case with the lips of a recent wound.

This progress then varies according to a great number of circumstances. The clavicle becomes solid much sooner than the femur. All the bones unite speedier in children than in old persons. At a certain age, in a state of languor, where there is a scorbutic habit, &c. the callus is formed very late, and sometimes it is never formed at all. In the latter case, a sort of cicatrix is formed on each fragment, and they are afterwards found united by a ligament which allows them to move. A perfect adaptation of the fractured extremities hastens their consolidation; but it even takes place when the fragments touch only by their sides. Motion even is not always an obstacle to the consolidation of fractures; and the callosity is formed very well in animals without any application to confine the parts. In a word, a *simple fracture* consolidates

solidates more securely, in a shorter time, and with fewer accidents, than a *compound fracture*, where the bones are crushed, with a considerable discharge of blood, laceration of the integuments, wound, &c. *Formation of the callus.*

58. When a bone which has been laid bare is speedily covered, the wound unites simply. If the bone has been at the same time cut, the surfaces of the division swell, and exhibit the same phænomena as a simple fracture.

But if the bone remains a long time uncovered its bare surface becomes yellowish, then brown, and sometimes black. At the end of a certain period, of greater or less duration, a fleshy ring, of a vermilion red colour, which raises up the indented edges of an osseous lamina, is observed; the latter progressively detaches itself from the edges towards the centre, in one piece, or in several; and suffers to be seen on the bone a stratum of granulated flesh, of a lively red colour, which furnishes good pus, and which cicatrizes in the usual manner of wounds.

The dead osseous piece separates more slowly the thicker it is, and according as the vitality of the individual is less active.

Sometimes a portion of the bone becomes dead, and tends to detach itself also, without having been uncovered, in consequence of a violent contusion.

Pain takes place, the bone swells, and there is developed in the soft parts a phlegmonous irritation, which gives birth to an abscess, and the aperture of the latter generally remains fistulous till the dead part of the bone comes out. On thrusting a probe into the fistulous sinus, a solid body, inequalities, and moveable fragments, &c. will be perceived. A long time is very often necessary before the osseous laminæ are spontaneously thrown out; but this operation of nature may be greatly shortened by extracting the dead and detached osseous fragment. *Exfoliation.*

59. When a patient has long experienced dull and sometimes very acute pains in different parts of a limb, there may appear in succession, and at periods more or less distant, an assemblage of phlegmonous symptoms, which sometimes terminate by resolution, and sometimes end in a phlegmon the aperture of which soon becomes fistulous. For the most part several phlegmons are formed around the limb, and the aperture of each is contracted by a roll of flesh inverted over the skin. They discharge a whitish serous liquid, which, when a momentary irritation comes on, assumes more consistence.

During this process the limb often swells to a considerable size, and becomes hard and unequal; sometimes the bone becomes fractured in one or

two places, in consequence of the slightest effort. Very often, after several years, it is observed that a probe thrust into one of the fistulas passes through a solid osseous stratum, and reaches a hard, dry, and sonorous body, found to be moveable, and in which no pain is produced by percussio. The patient, tormented by a dull and constant pain, and by phlegmonous paroxysms, more or less frequently repeated, falls at length into a state of decay, which brings on death by adynamic fever, scurvy, flux, consumption, &c.

On examining the part, a bone is found much swelled, unequal, tuberos, and pierced with holes corresponding by their number and position to the external apertures. In the cavity of this new bone is found an osseous cylinder, entirely loose, having the whole thickness or only an interior stratum of the primitive bone, and which may be equal in length to the whole distance comprehended between its articular eminences. When the portion of bone which separates is small, the disease is exceedingly tedious and painful. The exterior bone is much less voluminous and less unequal; one fistulous aperture only is formed, through which osseous fragments sometimes issue. The separated part is often composed of several laminæ detached from the inside of the bone (*mortification*). *Necrosis*.

When the mortified bone is completely separated,

rated, it will be proper, before the patient is too much weakened, to form an aperture in the exterior bone of sufficient size to afford a passage to the fragment it contains. This aperture then closes up slowly, following the usual course of a wound, accompanied with læsion of the bone.

60. Necrosis is the result of an irritation produced in the bone, in the periosteum, or in the medullary organ. Sometimes it is the consequence of a violent contusion, and very often it is impossible to assign any particular cause. It differs from exfoliation only by its extending to the whole thickness of the bone, or by taking place in the inside, so that the separated portion, enclosed in an osseous case, cannot free itself from it spontaneously: in other respects the progress is exactly the same; it is that observed in a wound occasioned by a violent contusion, by fire-arms, and which does not heal until the whole bruised surface is separated by phlegmonous excitement and consecutive suppuration. Hence, when any portion of a bone becomes mortified, there is produced in the contiguous part a peculiar mode of irritation, which is renewed and heightened by repeated paroxysms, and gives place to phænomena, the progress of which varies according to the parts in which it is propagated. The diseased bone becomes tumid and swelled; and the mortified portion

tion gradually detaches itself from the sound parts; the periosteum and the white tissues by which it is surrounded become painful, grow thick, assume a cartilaginous consistence, and at length ossify. Phlegmonous tumours take place in the neighbouring cellular tissue, and the apertures of the abscesses arising from them remain fistulous.

61. Another disease very often takes place in the spongy bones, or in the spongy parts of bones, but rarely in their compact parts. Its progress, which is generally very tedious, is still little known. Sometimes it develops itself under an ulcer, the bottom of which is unequal, puffed up, brownish, and filled with fungous flesh, and which bleeds on the slightest touch. At other times the parts exhibit only a soft flabby swelling; the skin assumes at first a reddish, and then a violet or brownish tint; it gradually becomes thin, loses its organic texture, and at length ulcerates. Sometimes there is observed on the outside, the orifice of a canal, which extends to the bone, through the flabby flesh. This aperture discharges only a reddish, turbid, fetid serosity, which blackens the instruments and linen. The probe penetrates easily to the bone, which is found to be covered with asperities and full of holes. If the bone be laid completely bare, its surface appears black or brownish, rough,

and covered with pores or cells filled with a thick, greasy, and fetid matter. By compression it sinks down, and a matter of the same kind is expelled.

Sometimes, however, the disease takes place at a greater depth below an exterior stratum, pierced only with some holes, through which the matter escapes. In certain cases, the bone appears as if carnified; the disease gradually spreads; and if left to itself the patient falls a sacrifice to it with symptoms of adynamic fever, scurvy, consumption, &c. But sometimes, when the individual is vigorous and of a strong constitution, the whole altered part of the bone detaches itself, as in the case of exfoliation, and leaves an ulcer, which after suppuration tends rapidly to cicatrize. To obtain a cure, it is however often proper to remove the whole of the diseased part. *Caries.*

Caries and exfoliation seem to have a certain affinity, which may be compared to that between a gangrenous ulcer and a wound by contusion which suppurates. In both cases the affection tends to spread; the vital action increases in the part contiguous to that affected, and this action contributes to produce the spontaneous separation of the mortified portion, &c.

Caries appears chiefly in consequence of syphilitic, serophulous, scorbutic, cancerous, &c. affections. It is always a troublesome disease, especially

especially where the bones are spongy; that of the articulations is rarely cured, and never without ancylosis.

62. The bones are often subject to *tumours*, which sometimes increase pretty rapidly with very acute pains, great heat in the part, and sometimes even a general febrile excitement. Sometimes they proceed very slowly, without any pain or symptoms of acute phlegmasia. These tumours exhibit great variety with respect to their form, their size, their consistence, and the changes they undergo. Some of them are hard, and possess little sensibility. When they acquire a certain degree of expansion, they are sometimes as hard as ivory, and remain in the same state, without producing any other inconvenience than what may arise from their bulk and their position. Others follow a continued progress, or again enter into action after a certain period of inactivity. A new tumefaction, accompanied with pain, heat, and redness in the integuments, then takes place; and in the course of time there is formed an abscess, the aperture of which becomes a fistulous ulcer, with all the indications of caries. At other times the tumour is soft; it assumes a cartilaginous or even carneous consistence, and seems to be formed by a swelling and softening of the whole substance of the bone. These tumours are almost always more or less

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painful,

painful, and at length dissolve, in some measure, into a puriform liquid. Sometimes the bone is in a state altogether similar to caries, partially softened, cavernous, perforated, and filled with osseous fragments or asperities. At other times it becomes soft, assumes the consistence of cartilage, and undergoes the same phænomena as ulcerous cancer.

These tumours take place sometimes in consequence of the violent contusion of a bone; but it often happens that they arise from a bad state of the constitution in general. They take place, in particular, after syphilitic, scrophulous, scorbutic, &c. affections. They have their seat in the periosteum (*periostosis*), or in the bone itself (*exostosis*). And they often appear before an alteration has been manifested in the surrounding soft parts. Sometimes they seem to arise from an irritation, which is first fixed in the soft parts, and is then propagated to the bones. *Osseous tumours.*

63. The bodies of the vertebræ are particularly subject to these two last modes of alteration, especially in young subjects.

The disease generally begins with wandering pains in some parts of the vertebral column, which increase by the motion of these parts. At the end of a certain period, of greater or less duration, the inferior limbs become weak, and children frequently

quently fall down. The debility goes on gradually increasing, and terminates in a sort of palsy; the foot becomes stiff, and is turned downwards, with an elevation of the heel. The patient experiences a sensation of pricking in the legs and thighs; sometimes a sort of palsy of the bladder, and even of the rectum, takes place; the vertebral column inclines, and forms a very striking projection in a determinate point.

Sometimes purulent collections are formed externally in parts more or less distant from the seat of the disease; as towards the region of the groin, or at the hollow of the nates: their aperture, whether spontaneous or imprudently formed, discharges, during the first days, a quantity of pus, sometimes thick and at other times serous, with a great many albuminous flakes: but in the course of some days this pus becomes fetid and brownish; the orifice is covered with an erysipelatous red, and sometimes ulcerated throughout a great extent. The functions of the stomach are deranged, a fever and looseness come on, and the patient dies in a month, or sooner.

On opening bodies at different periods of the disease, there have been found, during the first stages, a considerable swelling, with a softening in the substance of some of the vertebræ, of their cartilages and ligaments, and at later stages caries more or less advanced. In this case there is al-

ways found a purulent collection either in the thorax or in the pelvis : when there is no gibbosity or palsy, the lumbar vertebræ, the sacrum, &c. are found bare, and their surface appears carious.

This disease, when it attains to its utmost degree, is always mortal : it is generally less troublesome in children, because it manifests itself at its very commencement. In adults, the gibbosity for the most part does not appear till suppuration and caries have taken place.

In regard to the causes of this disease, nothing very certain is known : it is most common among children ; very often it depends on a mode of irritation which may be checked by a stronger irritation. The speedy application of caustic potash, moxa, &c. in the neighbourhood of the tumour of the back has therefore been attended with success. The other means, most generally useful for preventing or checking the development of this disease, are those which tend to strengthen the constitution : such as wholesome nourishment, exercise proportioned to the age and strength of the individual ; the cold bath, friction either dry or with aromatic substances, &c.

SPECIAL AND CONSTITUTIONAL PHLEGMASIÆ.

64. IT is not uncommon for this affection of the bones to assume a constitutional character. In this case the ordinary period of its development is that of the first or second dentition, and sometimes that also of puberty. It attacks more readily feeble children born of parents who have experienced it themselves; those who reside in dark, cold, and damp habitations; those who live poorly, or who are over-fed, deprived of exercise, &c.

The muscles of these children are generally lax, their skin is white and soft, with every appearance of their being in good health; the head is large, and the visage full and florid. If the development of the disease is to take place in the first year, or at the commencement of the second, the child is long in walking. If it develops itself at a more advanced age, the legs become weak; the child totters, and is continually falling down. It soon conceives a decided aversion to motion, and to the sports usual at that period. It affects the manners of old people; sometimes shows premature intelligence, with a hilarity which nothing can disturb; and at other times an air of stupor, and even a sort of imbecility.

A defor-

A deformation however is observed in several parts of the body ; the vertebral column becomes bent in different directions ; protuberances and nodes are formed around some of the articulations, particularly on the wrists, the heels, the sternal extremities of the clavicles and ribs, and the sternum. The long bones become crooked, especially in the fore-arm and legs ; the different parts increase unequally, and some of them even become shorter. The first dentition is retarded, and the second is sometimes checked by the teeth decaying in the sockets. The cranium assumes an extraordinary size and a deformed appearance, and the face remains short for want of expansion in the jaw-bone. The breast afterwards becomes contracted from one side to the other, projects forwards like the bottom of a boat, and assumes various misshapen forms. The head, often sunk down, is concealed between the shoulders, which project, and are more elevated on one side than on the other. The pelvis expands irregularly, and approaches the thorax, &c.

The body then begins to waste, especially in the lower parts ; the visage even becomes withered, dirty, scaly, and rugous. The abdomen is very prominent, in consequence of the considerable expansion of the liver, the mesentery, &c. The hypochondria are distended, and the skin is rough, dry, and hard. These symptoms are accompanied
with

with various affections of the breast, habitual difficulty of breathing, cough more or less fatiguing, spitting of blood, and pains in the side or between the shoulders. At this period death is unavoidable, and the patient falls a sacrifice to the disease after a gradual decay, or by the appearance of some other affection, such as dropsy, diarrhœa, scurvy, &c.

The anatomist then finds some of the bones softened, the vertebræ tumefied, and moistened with a reddish serosity; the ligaments and cartilages swelled and soft, particularly between the vertebræ. The extremities of the long bones are puffed up, and sometimes converted into an osseous, cartilaginous, or carneous mass; the bodies of some of the bones are wasted, harder, and more brittle. Collections of serous matter are found in the thorax and the pericardium; the mesenteric glands are large, indurated, &c.

This constitutional affection is not incurable during the first periods of its development. Its progress can be prevented or checked, chiefly by good physical education: such as wholesome nourishment, not too abundant; the proscription of farinaceous soups, similar to the food employed for fattening the livers of geese; perfect freedom of the limbs; a healthful habitation; exercise in the open air proportioned to the age and strength of the individual; swimming, dry friction, partial exercise of the part,
or

or of the weakest side of the body. Every kind of support or of machines, continually applied to assist the action of the weakened muscles, must be entirely banished, and occupations which exercise only one part or one side of the body, by forcing it to retain the same attitude, must be carefully avoided. On the first appearance of the affection in the bones, it will be proper to excite by moxa, the cauter, or a seton, a strong and continued irritation, which may counteract the expansion of that peculiar mode of action which produces the disease. The use of bitter stimulants, mercurials, &c. has also been found of service.

Adults are daily seen, whose deformities attest that their bones, for a long time soft and flexible at a tender age, have at length acquired solidity. There are few instances of universal softening and deformation of the bones at the period of adult age.

Rachitis.

65. There is still another constitutional affection, which manifests itself in the glands in particular, and in all parts where the lymphatic system is abundant: in general it precedes rachitis. It seldom fails to make its appearance in individuals who show at an early period, or bring into the world with them, a peculiar mode of exterior conformation; a white, soft, and smooth skin, the limbs round and plump merely by lymphatic fulness,

ness, with the flesh soft and flabby; the eyes blue and bleared; the hair a chestnut brown colour and bushy; the visage puffed up; the lips, alæ of the nose, and eye lids extraordinarily thick; the jaw thick, with the angles square and projecting; the cranium large; great delicacy in the senses; a premature development of the intellectual faculties. Frequent fluxions of the eyes, nose and ears, painful cracks in the alæ of the nose and in the upper lip; a discharge of matter from the head, from behind the ears, and from the arm-pits; scabby tetters in different parts of the body are often observed in the same individuals.

At this period the progress of the disease may often be easily suspended by the varied use of tonics of every kind; perturbing means, change of residence and in the mode of life, proper gymnastic exercises, &c.

A point of irritation is however soon established in some of the glands, and commonly in those of the neck, towards the angles of the jaw. A tumefaction and hardness, without pain and without any change in the colour of the skin, is first observed, and at the same time a moderate and transient febrile excitement. In the cellular tissue, near these tumours, new ones, bordered by a circle of the consistence of paste, are often formed. The latter soon show a manifest fluctuation, and furnish a liquid of a pale white colour, of no great consistence,

sistence, and sometimes reddish. The ulcers which thence result leave always behind them disagreeable scars. The tumours which have their seat even in the lymphatic glands remain very long stationary, and sometimes do not suppurate till after several years. They then increase, with moderate pain and a purple colour of the skin; they rise to a point, and at length exhibit an evident fluctuation. The matter is dispersed in several small insulated points, and is discharged through several apertures. Though at first much diluted, it gradually becomes thinner, and at length exhibits only a viscid, serous matter intermixed with whitish flakes. The small apertures often become covered with reddish fungous papillæ, or yellow scabs. The ulcer however extends itself in an irregular manner, and its edges become hard and crusty: if another tumour of the same kind ulcerates, it may cicatrize for a short time. Hence an alternation of tumours, ulcers, cicatrices, and new ulcerations is observed, till, the gland being completely wasted, there is formed an ultimate cicatrix with fretting and rugæ—permanent and evident testimonies of this troublesome disease.

The same series of phænomena is often seen to take place in the glands which are below the clavicles, under the arm-pits, &c.

The mammellæ are rarely attacked, and it appears that the affection then fixes itself in a special manner

manner in the lymphatic glands, which are adjacent to the mammillary gland. An induration commonly takes place; and if the tumour ulcerates, the mammella assumes a livid colour, becomes flat, contracted to the sides, and exhibits a deep furrow of a shining red colour. The matter appears sometimes thick; but for the most part it is liquid, black, and has a fetid smell.

In certain cases, indolent swellings are formed around some of the articulations, as the elbow, the knee, the joints of the fingers and toes. At the end of a certain period, of greater or less duration, several cracks appear, from which is discharged a small quantity of a reddish matter. The tumour generally increases, and the aperture of the skin is filled with fungous flesh, which sometimes spreads beyond it. The parts of these tumours, when observed at this period, appear soft, and as it were putrescent; the bones are soft, carious, or reduced to a sort of dirty brownish pulp. The articular cartilages are much less altered by the progress of the disease; the bones and the muscles lose their continuity, and the part at length detaches itself entirely. If the articulation be of considerable size, such as that of the knee, elbow, &c. the local affection gives rise to the general symptoms of almost all chronic diseases. A slight fever comes on, with small fits of shivering, a continual

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diarrhœa,

diarrhœa, loss of strength, and all the symptoms of scurvy in its last stage.

In other cases, the irritation fixes itself in some parts of the skin or of the sub-cutaneous tissue. The swelling proceeds very slowly, without pain, or any change of colour in the skin; it then becomes soft, rises up more and more, and assumes a purple or violet tint. The tumour at length opening pours forth a thick, reddish matter, which soon becomes liquid, yellowish, and mixed with clots of an albuminous appearance. On the edges of the ulcer the skin assumes a violet colour, becomes scaly and hard, and is covered with small pustules. The flesh at the bottom of the ulcer is flabby, and of a pale red or purple colour.

The irritation may also proceed to the glands near the abdominal and thoracic organs.

The affection of the glandulous system of the mesentery is characterized by all the symptoms of derangement in the digestive system. In the course of time these symptoms increase; the abdomen becomes distended, voluminous, and, as it were, full of protuberances.

The affection of the bronchial glands is announced by derangement in the functions of the pulmonary organ.

In all these cases, the strength is gradually exhausted; the patient becomes exceedingly attenuated,

ated, and the disease terminates like all other chronic affections.

The order we have followed in this view is not always that of nature. It exhibits the usual progress of different local affections; it even follows the most common order of their succession; but there is none of them which may not present itself first. Cutaneous ulcers, articular tumours, glandulous swellings, are often observed without any appearance of that peculiar conformation, the existence of which is almost an infallible indication of the disease.

This disease, when once developed, is exceedingly obstinate: it makes its appearance in every part of the lymphatic system, and in every part where that system is prevalent. The alterations which thence result appear successively in the adjacent or distant parts, from one side to the other; from the thoracic to the abdominal limbs; from the exterior parts to the interior organs, &c.; which gives to the whole of this malady an appearance of singular mobility. The cutaneous ulcers are succeeded by herpes, or other anomalous eruptions; the latter by a swelling of the jugular glands, and these by a scabby eruption in the head: the mesentery is attacked, and the exudation of matter from the head ceases: when the jugular glands become swelled, the affection of the breast disappears.

All these phænomena are merely the result of a peculiar mode of nervous action, which is excited, and becomes peculiar to the same anatomic system of organs. This mode of action produces, in different parts, a series of symptoms ready to cease when a certain circumstance favours their development in some other part. In general, however, there is always a moment when this peculiar constitution extends to a great number of points; it affects at the same time the mesentery, the lungs, the neck, &c. and leaves in the glandulous organs of these parts evident traces of its ravage.

The revolution of an acute disease has been seen to check the progress of this constitutional disease, and to make it disappear for ever. In some cases there is effected, at certain periods, especially towards those of puberty, a slow change in the constitution. The epidermis becomes more pliable; the skin loses its pale colour; the volume of the body decreases, or a very striking emaciation takes place; the pulse becomes frequent, and febrile symptoms often appear. The ulcers, however, discharge a thicker, more opaque matter, and cicatrize. All the secretions increase; the swelling of the glands subsides; and this revolution, which is more common among country children than among those of towns, produces a lasting cure in robust individuals capable of enduring it. But when

when the diathesis is fully established, and the patient already exhausted, it only hastens the progress of the disease.

The external symptoms are attended with no danger ; but they are always followed by internal affections of a more serious kind, or by a very troublesome alteration in some of the large articulations. The progress of the latter, though not rapid, brings on much sooner attenuation, diarrhœa, flow fever, sweats, &c. and all the signs of decay, which is soon followed by death. *Scrophula.*

The scrophulous disease is very common in Europe, particularly in Spain, England, and France. It shows itself chiefly in certain hollow valleys, and especially in those which look towards the north and the west, on the marshy borders of some rivers. It is remarked that it appears ofteneft among overfed children excessively corpulent, who take little or no exercise, or who are crowded together in towns, in confined, dark habitations, dirty, damp, and badly aired.

This disease rarely manifests itself before the second and after the twentieth year : its development often coincides with the period of some natural or accidental revolutions, such as dentition, puberty, menstruation, pregnancy, parturition, lactation, different acute diseases, &c. In infancy, it directs its effects chiefly towards the neck, the head, and often towards the mesentery ; in ado-

lescence it affects the lungs, &c. In general, its action is excited from the commencement of spring to the summer solstice, under a cold, damp constitution of the atmosphere; in summer it often decreases, and the ulcers cicatrize, in order to be renewed the spring following.

It has sometimes been possible to imitate by art the process employed by nature for the cure of this disease. In a word, the case is here the same as in all very obstinate chronic affections: they are either incurable, or gradually disappear at the end of a very long period, and by the concurrence of a thousand little circumstances which it is often impossible to appreciate. In all these cases, there is no remedy which has not sometimes proved efficacious; and all of them have often entirely failed.

But amidst the variety of prescriptions employed, some rational and others more or less absurd, it is evident that tonics long continued, and varied with much care, may be of utility. It is by the application of a good regimen, in particular, that the most salutary effects are produced: change of residence, travelling, sea voyages, gymnastics, wholesome and aromatic nourishment, varied occupations, &c.

66. In the article on catarrhal affections of the urinary passages, we have given the history of one, the matter secreted by which has a specific conta-

gious property, and produces the same disease, when brought into contact with the mucous membrane of the urethra or of the vulva, in the act of coition (*sypilitic blennorrhagia*); and we have given a sufficiently ample account of its most usual progress. This catarrhal affection exhibits highly varied degrees of intensity: sometimes it is scarcely sensible, and can be discovered only by the existence of the running; at other times it is accompanied with a strong fever, very great sensibility in the whole extent of the urethra, intolerable heat in making water, or an absolute impossibility of voiding it.

The affection in general is confined to the mucous membrane of the urethra; but sometimes it extends to the contiguous parts; the præputium swells, becomes red and painful, with an impossibility of pulling it back so as to uncover the glans (*phimosis*), or of pulling it forwards to cover it (*paraphimosis*). The glans, swelled and painful, may be strangulated also by the contracted aperture of the præputium, and exhibit symptoms of approaching gangrene. Painful involuntary erections take place, with an incurvation of the penis; and phlegmonous congestions may be formed in different parts of the adjacent cellular tissue, with symptoms more or less severe, and a termination more or less disagreeable.

Sometimes after several blennorrhagiæ of this nature,

ture, the canal of the urethra contracts; a chronic swelling takes place in its sides, in the prostate gland, and at the neck of the bladder, with different kinds of excrescences in the urethra. In all these cases the excretion of the urine is deranged: it is observed that, after repeated and painful efforts, the urine issues in a slender stream, interrupted, sometimes bifid, and falling in a vertical direction. The retention of urine may even become complete.

At other times the semen does not issue from the urethra, either at the moment of ejaculation, or as long as the erection lasts; but only after a longer or shorter period, and seems to fall merely by the effect of its gravity: in general, the patient suffers from the instant of the ejaculatory orgasm till the semen is completely evacuated.

Under some circumstances the blennorrhagic irritation seems to produce symptoms of diseases in the distant parts which have a relation with the urethra, in regard to functions, structure, or sympathy, shown by various phenomena of vitality: of this kind are the testicles, the inguinal glands, the conjunctive membrane, that of the nostrils, the back part of the mouth, &c.

When the testicles are affected during blennorrhagia, the patient first experiences in the groin a sensation of constraint which extends along the cord of the testicular vessels. It is observed, at the
same

same time, that the urethral secretion gradually decreases, or suddenly stops: the scrotum soon swells, and becomes red and painful; the epididymis, and even the testicle, are exceedingly sensible to the touch. All these symptoms rapidly increase, with intense fever, and a pain which is propagated to the loins.

After a longer or shorter period the swelling and pain decrease, and the disease terminates either by *resolution*, which is favoured by the speedy use of local bleeding, of topics at first mucilaginous and then stimulant, and by the natural or artificial return of the urethral running. In this case the epididymis in general remains tumefied, either by an *induration*, which is sometimes followed by a serous collection in the peritonæal tunic, and which at other times by an ulterior mode of action passes to the cancerous state; or by *suppuration*, which often leaves chronic ulcers with the preceding state of induration. In the last place, the testicles may waste away until no traces of them remain. Hunter speaks of a man whose testicles disappeared in this manner in the course of eighteen months.

The phænomena which follow the affection of the inguinal glands, are those which naturally result from a phlegmon of these parts.

We have described in another place the usual series of the symptoms of the affection of the conjunctive membrane; but when this affection coin-

cides with blennorrhagia its progress is often more rapid. It announces itself by a slight pain with watering of the eye; the pain then becomes more acute, and the redness more apparent. The conjunctive membrane swells, assumes a carneous aspect, and secretes a thick, viscous, and acrid matter. The cornea seems depressed, the eye-lids swell, and rise up, so that the eye remains half open; phlyctænæ appear on the conjunctive membrane, which give rise to small ulcerations; the cornea becomes opaque and whitish; and there arises sometimes above its surface a small tumour, the spontaneous or artificial rupture of which may suffer the interior parts of the eye to escape.

The progress of this disease, though exceedingly rapid during its first stage, gives way to local bleeding and to scarification, especially when the blennorrhagic running continues or is renewed.

These different diseases, which accompany syphilitic blennorrhagia, are almost always occasioned by causes capable of producing a sudden exacerbation of the urethral phlegmasia, at the same time that the other parts are disposed, either by weakness or a peculiar irritation, to become affected.

67. Syphilitic blennorrhagia is necessarily connected with another affection, which arises from the contact of a secretion equally contagious, and produced

produced by a small ulcer, generally situated in the genital parts, and which is propagated by coition. Some days after the impressiion of the virus the patient experiences an itching with heat in the præputium or in the glans; a small pimple then arises in the form of a miliary pustule, pointed and red, the summit of which becomes white, gradually flattens, and forms a vesicle. This vesicle when it breaks discharges a thin aqueous liquid; or a thicker yellow matter. The ulceration extends in surface and depth; several commonly appear in succession, and in the same manner. These small whitish and superficial ulcers furnish sometimes a thick opaque matter; the edges of them are round, somewhat projecting, and are neither hard nor very red. At other times they have irregular angles, are deep, and of a black or livid colour, with projecting red and hard edges: they discharge a brownish ferous liquid.

These ulcers scarcely ever disappear spontaneously; they may take place on all the mucous surfaces where the contagious matter is immediately applied; on the whole extent of the glans, on the interior surface of the præputium, and at the extremity of the urethra; on the interior part of the vulva, in a great part of the vagina, and around the anus; on the lips, and in every part of the mouth; around the mammillæ and their areolæ; but

but never on the skin covered with epidermis.
Chancre.

At first, these ulcers are always merely a local affection, and may be speedily cured when converted into simple ulcers, either by extirpating their root, or by destroying it with caustic.

This method is sure in its principle; when the chancre is recent; but it is not prudent to employ it when the ulcer has continued a certain time; when it is impossible to fix it, or when the concomitant symptoms will not allow the exacerbation of an affection already dangerous.

It may happen, either in consequence of the number of ulcers, or of the too incautious application of caustics, that the irritation will be communicated to the whole extent of the præputium and of the glans. The phænomena which we have seen in blennorrhagia may take place when the præputium, in consequence of its being swelled, can neither be made to cover nor uncover the glans (*phimosis* and *paraphimosis*); and when the contraction of the aperture of this expansion of the skin strangles the glans to such a degree as to produce on it crystalline vesicles, which announce a speedy gangrene.

These affections are generally removed by local bleeding, incision of the præputium, &c. When of long standing, they leave in the parts a swelling,

with

with permanent induration. Such is the origin of those nodes or tubercles, more or less numerous, more or less prominent, either visible or concealed in the tissue of the parts, and sensible only to the touch; of those hard cords which produce habitual phimosis or paraphimosis; of those rolls which give to the vagina the false appearance of virginity.

68. Chancres exhibit the principal character of syphilitic affection, and are probably the exclusive source of the product which propagates this disease by the way of contact; but very often the irritation which accompanies this ulcer occasions in the genital parts the formation of *excreescences*, highly varied in their form: some of them are oblong, slender, and smooth (*porri*); others short, smooth, and flat (*verruca*); and some flat and oblong (*condylomata*): in a word, there are some very large, and cut into fringes, leaves, &c. (*cristæ*). Excreescences similar to the *cristæ* arise around the anus; spheroidal, granulated tumours adhering to the skin by a thin pedicle (*thymi, ficus*, &c.) These fleshy excreescences are sometimes soft, pulpy, and smooth; sometimes hard and rough: in general, they have the same colour as the skin, and are susceptible of becoming inflamed and suppurating in consequence of any irritation. All these excreescences sometimes fall off in scales, or dry up
spon-

spontaneously; at other times they leave a root, from which they are continually reproduced. They often remain a long time after the syphilitic constitution has been destroyed by means of proper treatment. They then seem to be maintained by the force of habit, and their reproduction is favoured by the heat and moisture of the part, forming in this manner a real animal vegetation. I have often obtained a cure of very strong porri, which covered the whole surface of the glans, and for which a great deal of mercury had been taken without any effect, merely by causing the glans to be kept uncovered for some time, so as to deprive these excrescences of the heat and moisture which maintained them.

69. Ulcerous fissures, which often arise from a mere laceration of the skin, but which in other cases may be considered as real chancres, often take place in the rugæ or furrows around the anus. These ulcerations; which are sometimes superficial with soft edges, and attended with little pain, furnish a constant excretion of an opaque white colour. At other times they are deeper, with hard projecting lips, produce shooting pains, and discharge a brownish, turbid matter. *Rbagades*.

Almost all these local affections have this in common, that during their whole course they may give rise to phlegmasic swelling in the neighbour-
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ing glands: that of the inguinal glands is the most common, and the most remarkable. The patient first experiences a slight pain in the groin; which is soon followed by a tumour, tension, hardness, local heat, throbbing pain, without any change in the colour of the skin yet taking place. The tumour, sensible only to the touch, rises more or less speedily, and acquires a volume which varies from the size of a pigeon's egg to that of the fist. The skin becomes red, and fever sometimes announces itself by the usual symptoms. A resolution may be effected; but there often remain chronic indurations, forming sometimes one tumour, and sometimes several tubercles arranged in rows or dispersed different ways in groupes. The suppuration is seldom very speedy; it is followed by a very obstinate ulcer, and by callosities which become soft only after a long course of time. The flesh is flabby and exuberant, and these ulcers secrete a clear liquid, interspersed with albuminous flakes; the edges of them project, and appear as if torn, and withered by a sort of gangrene. At other times, however, the aperture of the phlegmon leaves only a small fistulous hole, with an exudation of matter, which continues until the whole hard swellings have disappeared. *Buboes.*

These buboes, produced by the specific irritation of syphilis, are not different from those which take place sometimes in consequence of the introduction

duction of a probe into the urethra, or of a prick in the foot. They are entirely similar to those which arise in the axillary glands, and after phlegmonous irritation in the fingers or wrist. In all these cases the phlegmon follows the same progress, and exhibits no essential difference.

70. The preceding affections always suppose the application of a specific matter, either to the mucous surface or to some part deprived of epidermis. Chancres and blennorrhagia take place in the part which has received the impresson, and produce a secretion possessing the same specific quality. It has not yet been proved that the matter excreted by a chancre is the same as that furnished in the blennorrhagia, and that these two affections can be reproduced from each other. It is certain that in the greater number of cases each reproduces that mode of development which is peculiar to it. It however appears, that under some circumstances the product of a chancre, conveyed to the urethra, excites in it blennorrhagia; but it is not probable that the product of an urethral catarrh can ever give rise to a chancre.

The different cutaneous excrescences are for the most part consecutive phenomena, as well as buboes; but, even if we suppose that they can be directly produced by the impresson of the specific irritant, it does not appear that this irritation can
ever

ever impress a contagious character on the matter furnished by these excrescences.

71. Whatever may be the affection which first appears, it is merely local, and is always susceptible of being annihilated when it begins to develop itself, if an impression of another order, sufficiently strong to derange the first, be determined towards the affected part. This result may be obtained by excision, the cautery, different caustics, and other powerful irritants. But at the end of a certain time, the duration of which it is impossible to assign, the local impression may have produced in the whole constitution a particular state, which sooner or later gives rise to a series of phænomena sometimes very singular. This general state appears to be produced, for the most part, by the presence of a chancre.

The first signs very often are: a dejection and extraordinary languor, pains around the head and in the shoulders, a sensation of lassitude in all the limbs: at other times are observed watchfulness, or sleep which does not revive the strength, agitation, an acceleration of the pulse, heat in the skin, decrease of appetite; the patient becomes thin, and a rapid decay may ensue. All these phænomena, which are very obscure, exist sometimes for a long period, and are at length succeeded by others which become more positive.

The first symptoms manifest themselves chiefly in the mucous membranes, the naso-guttural conduits, and the skin. The patient experiences dull pains in the mouth, throat, and nostrils; deglutition becomes difficult; the fauces are hot and red; and these symptoms are followed by ulcers of a dirty white colour, with thick, red, and hard edges, which have an appearance as if torn. Pustules also, which are converted into eating ulcers; take place in the *velum palati*. Similar ulcers are observed in the lips and gums, in the inside of the mouth and nostrils: the disease sometimes develops itself in the sinuses, and produces ulcers, which discharge a highly fetid matter. In some cases the voice alters, and hoarseness and aphonia take place.

Particular symptoms are observed also in several other parts:

In the ear, an erosion of the guttural conduit, and different affections in the organs of hearing.

Towards the eyes, a swelling of the edge of the eye-lids, with hardness, itching, redness, ulceration, and excrescences. On the conjunctive membrane, flow, obstinate ophthalmiæ, and the different phænomena which are the consequence of them.

Towards the genitals, ulcers similar to the primitive chancres, but which follow a more rapid progress.

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On the skin, spots of different forms, sizes, and colours; fissures in the skin of the hands, and in the soles of the feet; an itching, with an exudation of a reddish matter: the epidermis detaches itself in pieces; pustulous tumours, hard, dry, and scaly, and sometimes ulcerated, more remarkable at the angles of the lips, the alæ of the nose, around and on the whole extent of the scalp, take place; the hair, nails, &c. fall off.

In a word, phlegmonous tumours, which follow a very slow progress, may arise towards the lymphatic glands.

In its further progress, the disease seems to attack in a particular manner the white fibrous organs, and to produce phænomena very much varied. Thus different alterations are observed in the organs of hearing; with violent pain in the cavity of the ears, swellings in the joints, tendons, aponeuroses, &c.; with pains exceedingly variable, both with respect to their nature and intensity, sometimes fixed to one point and sometimes wandering; generally more acute in the evening and at night; more frequent in winter and in cold countries. These tumours terminate, sometimes, in collections of a viscous matter, and at others are transformed into hard nodes, which may remain during life.

In the last stage of the disease, the osseous tissue itself seems to be affected; the osteocope pains in-

crease in the night-time, and the affected bones experience different alterations. They swell in an enormous degree, become soft and spongy, and acquire a cartilaginous consistence, accompanied with caries, exfoliation of fragments or laminæ of greater or less thickness. Several bones of the nose and fragments of the jaw-bones detach themselves in succession, the teeth drop out, &c.

At this period the glands of the interior organs begin to be affected; those of the mesentery, of the pancreas, and of the bronchiæ swell, become hard, and at last ulcerated.

In this state, as at the end of almost all chronic diseases, the strength becomes gradually exhausted; the general symptoms of scurvy, in its last stage, come on, with diarrhœa and nocturnal sweats, which inevitably bring on death. *Syphilis* (confirmed pox).

In this general view we have endeavoured to exhibit both the most usual phænomena of constitutional syphilis, and the most constant order of their succession; but it is far from corresponding exactly with all the particular cases under both points of view: very often the order of their development is inverted.

In these phænomena no peculiar affection is discovered. None of the symptoms enumerated belong exclusively to syphilis; and we may even add to them all those of the other diseases, and particularly

cularly of such as are chronic. All these effects can be considered only as a new mode of general action, which produces particular alterations in the different organs.

This state always supposes, that a matter furnished by a chancre and applied to a mucous surface, or a part without epidermis, in another individual, has excited there a specific irritation, and a peculiar mode of action in the nervous system, which is not of such a nature as to cease spontaneously, and which produces a secretion capable of propagating the same disease by the way of contact.

It is very doubtful whether a bubo or cutaneous excrescences are the primitive results of contagion. These affections, which indicate constitutional syphilis, appear to be only consecutive phænomena, susceptible of ceasing and of being continually renewed, and which do not give to the individual in whom they appear the property of communicating the disease.

Blennorrhagia, after having successively passed through the same stages as a common catarrh, generally terminates of itself; and for the most part gives rise to no phænomena which announce constitutional syphilis. Chancres, which seem to be the same thing in blennorrhagia that aphthæ are in catarrhs, exhibit this peculiarity, that they never disappear spontaneously, and that they are always followed by a syphilitic diathesis. Besides, it is

known that at the period when syphilis was introduced into Europe, its symptoms were generally more violent than they are at present; and that for nearly half a century few instances of blennorrhagia are mentioned. The latter affection is now more common, and constitutional syphilis is much rarer and much less violent in its effects.

It would appear that in the course of time, and by a treatment less violent, more suitable and more expeditious, the chancre would lose its intensity; and that its product, becoming less energetic, would cease to have the property of producing so easily the same affection by the way of contact.

It appears then that the secretion of a chancre, while it loses its specific, contagious property, still retains the faculty of producing a particular catarrh. The secretion of this specific blennorrhagia does not, in general, possess sufficient intensity to reproduce a chancre; but it retains the property of perpetuating itself by the way of contact.

One might even say, that in the course of time blennorrhagia degenerates in the individuals who have been affected with it more than once; that it no longer exhibits the same malignity in its symptoms, and that it becomes less contagious.

72. It is not probable that the foetus can be affected by syphilis, as is the opinion of Doublet. When the symptoms by which that disease is characterized

characterized appear after birth, there is reason to think that the child, whose skin is as yet covered by an epidermis exceedingly thin, has contracted them during parturition, in passing through the vulvo-uterine conduit, or has received them afterwards from its nurse.

73. The most usual and most effectual remedy against constitutional syphilis is mercury. The different ways of administering it, which are exceedingly numerous, may be seen in most medical works. Formerly this metal was employed in such a manner as to produce an abundant discharge of saliva from the mouth. At that period a complete salivation was perhaps necessary; but at present it seems to be useless. Practitioners, however, still agree in not depending on the efficacy of mercury, unless its action begins to manifest itself on the salivary glands, or on some other organs, such as the intestines or the skin. In general, the treatment is the more certain, according as the action is more uniformly distributed to almost all the secretory organs.

The doses of mercurial preparations must be varied according to the actual susceptibility of the individual, and according to many other particular circumstances. The action of the remedy must be sufficiently strong, and long enough continued, to destroy the syphilitic habit, which has

produced and which maintains the different symptoms of the disease. This foreign mode of action being deranged, the different affections return to a state of simplicity, which renders them susceptible of a spontaneous cure.

Sometimes the symptoms of the disease assume, by the action of the mercury, a peculiar character, which renders them equally obstinate. At other times, new ones are called forth; but both may afterwards terminate either spontaneously or by the effect of some other remedies.

It often happens, after a long and fatiguing course of mercury, that the symptoms do not disappear, for want of sufficient vital energy: in this case they yield to the varied application of corroborants.

The syphilitic affection has been cured by a great variety of means. In warm countries, a cure is almost constantly effected by the use of sudorifics, taken in very large doses, with the concurrence of all those means which are proper for seconding their action. The use of carbonate of ammonia has succeeded with professor Peyrilhe; and we know from the testimony of Sanchez, that the Persians and the Poles are acquainted with no better means of cure than to immerse themselves for twelve days, up to the neck, in the sewer of a necessary. A coachman of Paris either cured or killed, in eight days, by the use of coloquintida

wine. In 1549, an old practitioner of Palermo effected a cure in twelve days, by causing his patients to take every fourth day, that is to say, three times in the course of the above period, an ounce of good old wine, in which a coloquintida apple had been infused for one night. He provoked sweats by placing the patient in a warm bed during the days of interval. Fallopius relates that galley slaves have been cured by very severe labour, with nourishment of a moderate quality and in small quantity. The people of Auvergne often carry the pox with them from the towns to their mountains, and are cured without the use of any remedies *.

Success obtained by means so different in appearance, but all similar, as they are very energetic in their effects, tend to prove that syphilis consists only in a certain state of constitution or mode of being, the habit of which must be destroyed by impressing on the whole system a violent shock or general revolution, maintained for a determinate time.

74. A blow on the breast produces in its cellular tissue a mode of excitement nearly similar to that of phlegmon: a swelling, accompanied with redness, heat, and an extraordinary degree of sensibility, &c. takes place. It is possible that a *resolu-*

See Topographie de la Haute Auvergne.

tion may be completely effected ; but if the impression has conveyed its effects to the glandulous tissue itself, it frequently happens that the resolution does not bring it back to its former state. At the end of a certain time, a hard and often very small nucleus is observed, which increases slowly, without producing much restraint or even very sensible pain. This tumour, *indolent* even when pressed, which is generally round, and moveable in the cellular tissue, remains afterwards stationary for a longer or shorter time. At this period it would exhibit to the anatomist a structure almost homogeneous, a consistence more or less firm, from that of lard to the consistence of cartilage : a whitish colour pretty uniform, and the appearance of boiled white of an egg, or albumen, which has assumed the concrete form. *Schirrbus*.

After a certain period, however, the tumour experiences a new mode of action, very remarkable : it is generally produced by a contusion, by the improper use of caustics, by any irritant whatever, and in some cases without any appreciable causes.

The tumour acquires gradually an extraordinary degree of sensibility ; the patient first experiences titillation, a disagreeable itching, heat more or less violent, and soon after a transient shooting pain or pungent lacerating pains, in short, paroxysms, which increase on the approach of night.

The tumour increases in an unequal manner,
and

and its surface appears indented; the skin in some parts acquires a purple red colour, and then becomes violet and brownish. It exhibits blueish lines or nodes, which arise from a varicose enlargement of the neighbouring veins; it grows tapering, and presents one or more points, to which the pain seems, in particular, to be directed; it assumes a more striking purple colour, and an exquisite degree of sensibility. In consequence of a gangrenous sort of excoriation, it suffers to exude a liquid, which is generally reddish without any disagreeable odour, but which soon becomes exceedingly fetid. A scar then detaches itself; the ulcer enlarges in every direction, and a hæmorrhagy is often produced by the successive erosion of the varicose veins. The bottom of the ulcer is unequal, of an ash colour, livid or black. Its thick, projecting, and hard edges split, the pain becomes pungent, burning, and intolerable. *Cancer.*

The tumour however continually increases, notwithstanding the suppuration; in proportion as one part seems to dissolve, the swelling spreads by a sort of irritation to the neighbouring cellular tissue, and the tumour soon approaches the muscles, or even traverses them, and fixes itself on the ribs. At this period a hardness and swelling of the glands near the arin-pit are generally observed. Sometimes the other breast tumefies, and becomes hard; and similar tumours, which occasion
a dull

a dull pain, manifest themselves even in very distant parts. At last the cancerous diathesis often extends its effects to the fibrous membranes of the articulations, and to the bones, which swell, become carious as well as exceedingly brittle, and break on the slightest exertion of the muscles.

After a certain indeterminate period spent under the greatest suffering, without sleep, and without a moment's repose, all the functions soon become deranged, and the strength is exhausted; irregular fits of shivering, followed by heat and small sweats, take place, with obstinate diarrhoea, and marasmus which brings on death.

75. The testicle, like the breast, is subject to the same phlegmonous mode of action; and like it, may afterwards pass to the schirrhous state. The epididymis, in particular, scarcely ever recovers its natural condition. In general no further inconvenience arises, except that there remains in the testicle a little swelling, with a commencement of induration, both of which slowly increase, and nearly by an uniform progression. The cord even swells, becomes hard, and acquires nodes, which extend towards the inguinal ring or even into the abdomen. At length, after a series of phænomena analogous to the preceding, several small ulcerations take place, which unite into one cancerous ulcer, with shooting pains, and hard, livid,

livid, projecting edges, often filled with varicose nodes. In this, as in the preceding case, it often happens that scirrhus or cancerous alterations take place in other parts, and particularly in the other testicle.

76. We have already mentioned the swellings, accompanied by induration, which are often the result of different kinds of phlegmasia, either acute or chronic. The anatomist meets with these tumours in almost all the organic systems, and especially towards those parts where the lymphatic system or the white fibrous tissue is predominant. He finds them, in particular, in the lymphatic glands, and the other glandular organs; in different parts of the pneumo-gastric and genito-urinary organs; in the white articular tissues, &c. These tumours are seldom confined to one point, being for the most part dispersed throughout different organs.

All these tumours exhibit the perfect scirrhus state, with respect to homogeneous structure, colour, consistence, &c.; and they are susceptible of that peculiar mode of action which makes them pass to the state of cancer. Such is the origin of cancers in the pylorus and œsophagus, or in the pancreas, the mesenteric glands, at the extremity of the rectum, in the prostate gland, at the neck of the bladder, &c.

Similar

Similar tumours arise in different parts of the uterus, and particularly at the orifice of the vagina and in the ovaria. They are always the result of an acute or more frequently of a chronic phlegmasia, either in its mucous membrane, or in the sero-fibrous tissue of its exterior tunics. In general, they are preceded, a long time before, by a leucorrhœan secretion, with a sensation of heat, either in the vulvo-uterine conduit, or in the whole hypogastric region, and for the most part by great irregularity in menstruation. These tumours, after being long indolent and stationary, often become cancerous, especially towards the period when menstruation ceases, and always with the symptoms before mentioned. When the cancer is ulcerous there issues from the vulva a fetid, brownish fluid, accompanied sometimes with pieces of scars or of fungous flesh. The vagina itself becomes painful, and ulceration is sometimes produced in it by the continual application of this irritating secretion; the lips of the vulva swell, and become turgid; the inguinal glands tumefy, and remain hard; the thighs as well as the legs contract also a soft flabby swelling. The same mode of irritation is propagated to the rectum, to the prostate gland, and to the neck of the bladder; and is communicated sometimes to a very great distance.

That which is peculiar to the white fibrous
tissues

tissues is to be considered also as the product of an analogous mode of action. Such are those chronic swellings of the articulations, occasioned either by a contusion on the part, or by rheumatic phlogosis. They follow a very slow progressive course, and at length arrive at a state in which all the parts are converted into a mass almost entirely homogeneous and albuminous. These tumours, after remaining an indeterminate time almost stationary, and without pain, at least very sensible, assume a more rapid increase, with inequalities on their surface, a greater or less sensation of heat, and violent shooting pains. The skin, interspersed with veins, is distended, and becomes marbled with different colours, white and red, then violet or brownish. It grows thin in some particular points, where the pain seems to be concentrated; and one or more apertures at length afford a passage to a fluid rarely puriform, for the most part thin and reddish, which in a few days becomes exceedingly fetid. These tumours then begin to increase in a more evident manner; the pains become intolerable, especially towards the evening and during the night, and the general state of the patient tends directly to speedy death.

The skin also is susceptible of passing to the scirrhus and then to the cancerous state, especially towards the lips, the alæ of the nose, and all the parts of the face. The disease generally begins

gins by a small excrescence or wart, which, after continuing a certain time in a state of almost complete indolence, at length assumes the cancerous character, in consequence of any irritation whatever: such as repeated laceration by the nails, imperfect excision, the application of a caustic incapable of destroying the whole tumour on the first trial, &c. The tumour increases, and becomes painful, its summit exhibits a livid ulcer surrounded by hard and projecting edges, which increases with more rapidity as the pains are more violent. The swelling spreads in proportion as the ulceration destroys the parts; and the disease may speedily extend over a very large surface, and penetrate even to the bones.

Three very distinct stages are observed in the general progress of a cancer.

1st. A hard round tumour, attended with little or no pain, the effect of a chronic or acute phlegmasia, increases slowly, or remains stationary, &c. This is the scirrhus state. It develops itself only in the different portions of the lymphatic and glandulous system, and in the white fibrous organs. The interior part of it has always a resemblance to concrete albumen.

2d. A new mode of action, which announces itself by tickling, heat, and shooting pains which return by paroxysms, is then developed in the tumour. The tumour increases more rapidly, and exhibits

exhibits inequalities at its surface. The skin of the part becomes altered: the matter discharged when the tumour breaks is sometimes puriform, oftener serous, reddish, and inodorous; but it soon acquires a brown or blackish colour, and is exceedingly fetid. The pains, however, increase with the size of the tumour; the ulcer becomes larger; and exhibits an unequal surface of a livid brown colour, with hard projecting edges which have the appearance of being torn, &c.

3d. After a certain period, sometimes very short and at others of several years, a manifest alteration is observed in the different functions; the appetite decreases, digestion becomes difficult, an obstinate diarrhœa takes place, with a general decay, and every sign of approaching death.

77. External cancers are frequently the consequence of particular accidents, merely local; such as contusion, laceration, &c. Internal ones proceed from every circumstance capable of developing a phlegmonous action in the glandulous organs and white fibrous parts. This affection is more common among women than among men.

The scirrhus or cancerous state of the internal parts arises for the most part from a peculiar affection of the whole system. That of the external parts, when it results from external irritation, is at first an alteration merely local. But even in this case,

case, the whole system, at the end of a certain period, participates in the mode of irritation, which was at first fixed to one single point.

Internal scirrhus or cancers, especially when multiplied in different organs, are almost always accompanied with an effusion of serous matter, either in the cells of the sub-cutaneous tissue of the lower limbs, or in the large cavities.

Perfect schirrus, that is to say, hard, indolent and almost stationary, is rarely susceptible of cure. An occult and ulcerated cancer is never cured spontaneously. Excision affords the only hope of safety, provided a cancerous diathesis of too long standing does not exist.

PHLEGMASIÆ OF THE SKIN.

78. THE skin of children, and particularly that of girls, often becomes covered in several parts with a *furfuraceous efflorescence*, which exists for a longer or shorter time. It is observed that the old laminæ, as they detach themselves, are speedily succeeded by new ones. Sometimes there is a slight itching, and for the most part the skin retains its natural colour, and seems only to be somewhat raised. This affection disappears of itself, and rarely continues to the age of puberty. *Herpetic efflorescence*.

79. The skin of adults also becomes covered sometimes with spots rough with furfuraceous scales having an edge or area somewhat elevated, of a reddish colour, dry or slightly moist, accompanied with itching, pricking, ardent heat, shooting pains, especially towards the evening or night. When examined by a magnifying glass the skin at first appears covered with miliary pustules, transparent at the summit, and surrounded by a red ring. On bursting, they discharge a liquid, which assuming the concrete form, produces the scaly stratum that first strikes the eye.

This eruption is commonly composed of solitary or less distinct areolæ, which multiply by radiations, or extend to the neighbouring parts by excentric circles. In proportion as the old furfuraceous scales detach themselves, other pustules arise, and pour forth that excretion which produces new scales.

The part first affected remains smooth and shining, and sometimes marbled with reddish specks, circumscribed by a furfuraceous and erysipelatous ring. The skin never recovers its usual colour and appearance till after a considerable time.

This form can hardly be separated from that in which the skin slightly elevated, at first reddish, and then gray or white, exhibits a rugous surface full of cracks, pulverulent or somewhat humid. It is covered with thin, whitish, and semi-transparent scales, which fall off in abundance under the nails of the patient while scratching himself with eagerness, and which are speedily succeeded by new ones.

This affection differs from the preceding only in the size of the furfuraceous scales. It appears in clusters, sometimes of considerable extent, either continued or with intermediate vacuities, which may every moment be filled up. Sometimes it confines itself to several points of the body; at others it covers the whole surface, in a more or less

less uniform manner. This affection, however, is different from the former in this respect, that its attack is not so sudden, and that its progress is slower and more obstinate. *Furfuraceous scaly herpes.*

In other individuals, there first appears on the skin a hard, rugous, and rough pustule; the epidermis rises up, and pours forth a drop of a whitish liquid, and afterwards a reddish, brown, and sometimes bloody matter. The small ulcer soon becomes covered with a yellowish ash-coloured, brown, or blackish crust, which greatly exceeds its diameter, and gradually continues to increase. These pustules are seldom single, being in general more or less numerous, and disseminated over different parts; those near each other unite into one large scab, which may be sometimes from six to twelve lines in thickness; these scabs are rough, and exhibit fissures moistened with a reddish or bloody matter. The skin around them appears swelled, hard, red, and full of cracks. The patient experiences an insupportable itching, and the scabs which drop or which are scratched off by the nails are soon succeeded by new ones. The disease gradually extends, and sometimes makes its appearance suddenly in distant parts. Men have been seen entirely covered by these scabs, with deep fissures, and bleeding ulcers, alternately

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tormented

tormented with thirst, itching, and ardent heat, exceedingly painful. *Pustulous scabby herpes.*

80. All these affections, but particularly the last, terminate sometimes in real ulcers; sometimes the skin seems merely to be excoriated, without its dermoid tissue being sensibly altered. Sometimes it is very thick, hard, and erysipelatous all around; the ulceration seems to have corroded its whole substance, and to have penetrated even to the muscles. These small ulcers are commonly united into large sores, which discharge a thin serous liquid. Sometimes they destroy the whole skin of the fore-arm, of one side of the forehead, face, &c. nearly in the same manner as a cancer of the skin.

These three principal kinds include, between them, an indefinite number of varieties, from the simple furfuraceous efflorescence, which is attended with no other inconvenience than that of injuring the regularity of a fine countenance, to that state in which almost the whole surface of the skin covered with scales or yellowish crusts, bleeding rhagades, pale and fetid ulcers, exhibits the most hideous spectacle, and occasions a continual heat, intolerable itching, and severe smarting pain.

This affection, in all these cases, consists in large pustules, insulated or exceedingly small, very numerous, and formed into clusters; transparent

or whitish at the summit and red at the base, with a more or less apparent exudation of matter, which hardens into furfuraceous scales or scabs. The herpetic area gradually extends; the eruption manifests itself in different remote parts at the same time, exhibiting a singular mobility, and alternations of calmness and exacerbation: the itching is more violent at the periods of digestion and of sleep, during hot, damp weather, &c.

This affection develops itself, for the most part, in the spring; becomes milder during the heats of summer, and disappears in dry winters. It rarely comes on in youth, it is more frequent and more obstinate in adults, and particularly so in old age, when its existence seems to be necessary to health.

Observation has shown that the following circumstances concur, in a particular manner, to favour the development of herpetic eruptions: hereditary transmissiion, perhaps immediate contact; habitual dirtiness; the use of too abundant nourishment, or nourishment of a bad quality; penury and want; the long continued or permanent influence of a cloudy atmosphere; residence in low maritime countries, inundated, or surrounded by thick forests; melancholy moral affections, &c.

An intimate relation is often established between herpetic affections and a variety of other diseases; such as catarrhal, rheumatic, and gouty affections; organic or merely nervous affections,

which take place in various parts of almost all the different systems of organs. Sometimes the commencement of these diseases coincides with the disappearance of herpetic affections; at other times herpetic affections begin to manifest themselves when these diseases terminate.

In general, catarrhal affections are those which most commonly come on alternately with diseases of the skin, on account of the great relation which exists between the internal and the external surfaces.

An herpetic eruption, or eruption of an herpetic nature, may be occasioned by the particular action of certain internal organs, or by the derangement of some functions: hence similar eruptions often take place after the use of some particular kinds of drink or aliment.

The spontaneous development of an herpetic eruption may prevent an internal derangement, or contribute to moderate or to cure it. This is a result analogous to that obtained by friction, flagellation, urtication, vesicatories, the cautery, or any kind of irritation in the skin or in another organ. There is no doubt that the sudden suppression of an herpetic eruption may sometimes become fatal, by the production of internal alteration.

Sudden suppression of habitual herpetic irritation may often produce derangements in some of the internal organs. The vital action which maintains

tains a phænomenon of health or disease, may be compared to *produced motion*, which always requires to be employed in toto. When this action is interrupted in one part, it goes to consume itself in that organ which is more disposed to receive it, and to correspond to it. This effect is what ought to be expected from all sudden changes which take place in the organization. It is indeed observed, that all diseases which cure themselves pursue for the most part an insensible course, and so much the slower as they are of longer standing. When they assume a more rapid progress, they always expose the patient to a certain danger, which he escapes only in consequence of a thousand singular movements, which arise from the employment of the interrupted vital action.

A wide distinction, however, ought to be made between an herpetic affection, which forms one or two eruptions, often with great intensity, a rapid progress, and a great many acute symptoms, and that which by a long duration or frequent returns has acquired, through habit, a great influence on the whole constitution. In the first case a cure may be speedily effected without any danger, but the second may be attended with a considerable degree of it.

The most proper means to be employed in the treatment of herpes are: 1st, Those which tend to remove all circumstances capable of contribut-

ing towards the development, maintenance, and renewal of the specific irritation ; 2d, Those which produce an increase of action in any of the organs, and particularly in the gastric system, in order to diminish gradually, in this manner, the mode of action established at the skin.

In general, there will be no inconvenience in attacking suddenly a recent herpetic affection ; but this process is more dangerous, and requires more method and caution, when the affection is of long standing ; when it evidently coincides with some organic læsions, some natural functions or acquired habits.

81. The skin of the head, and particularly that of the scalp, becomes sometimes the seat of an affection very similar to herpes. It belongs almost exclusively to the period of infancy, and rarely manifests itself after the age of puberty. This disease exhibits such a variety of shades, and has been observed with so little precision, that it is still difficult to determine under what principal heads its numerous varieties ought to be classed.

It sometimes appears under the form of scaly furfuraceous crusts, of greater or less extent, and very numerous. Sometimes the skin below them exhibits no alteration ; and this slight desquamation, though pruriginous, disappears generally of itself, if proper attention is paid to the cleanliness

of

of the patient. At other times, the skin slightly elevated has a reddish appearance as if excoriated, and discharges a white or reddish serous matter, which reproduces the scales in proportion as they are detached. The itching is then more violent : the disease begins by a miliary eruption, scarcely perceptible, with redness, a sort of ardor and severe smarting. Exposure to the scorching heat of the sun, and the application of acrid or irritating things, often contribute to its development. It seldom happens that it is very obstinate.

At other times it begins by pustules formed into groups, confined to some parts of the head, red, and exceedingly pruriginous : when opened they discharge a liquid somewhat thick and viscid. This liquid is gray, yellow, or brownish, and thickens into crusts of the same colours. These crusts are moist, at least towards their edges, or entirely dry ; they detach themselves spontaneously in scales, or by being scratched, and are speedily succeeded by others. After they have been completely removed the skin appears smooth, shining, and red ; tumefied, and as it were soft like paste ; sometimes it is slightly excoriated, and exudes a matter similar to the former. The irritation often spreads to the neighbouring parts, with an erysipelatous redness ; red spots are observed, and even crusty pustules, on the forehead ; in different parts of the face, and particularly
around

around the lips, on the chin, on the alæ of the nose, &c.

To this form we must refer the ulcerous exudation with which the heads of children are often covered, during the first years of life, and especially of those who are over-fed, loaded with fat, deprived of exercise, and too warmly clothed. This affection attacks in preference the crown of the head, the upper part of the forehead, the circumference of the ears, and extends sometimes even to the arms. We must refer to the same class those scabby exudations which break out in children tormented with vermin, and which disappear when the destruction of the vermin removes the cause of habitual irritation and insupportable itching.

In the third case, there appear even in the middle of the tissue of the skin small lenticular or pifiform tumours, whitish at the summit, and which acquire a size and form exceedingly variable. When opened they discharge a thick matter of a yellowish white colour, inclosed in small cavities. The odour of this excretion is highly fetid. The child experiences a violent itching, which is speedily followed by acute pain. At length the skin becomes covered with dry or moist scabs, either large or small, unequal, and sometimes of considerable thickness; alveolar ulcers, which sometimes contain red fleshy granulations; deep

furrows or crevices, in which is found a thick matter; and then new pustules, the source of new ulcerations. At times the whole skin of the head swells, and fever, delirium, &c. take place.

The affection speedily spreads to the bulbs of the hair, which become withered; the hair assumes the whiteness and tenuity of soft flax, and sometimes drops off entirely, never to grow again. This affection proceeds even to the bones, which become carious; at last the lymphatic glands swell, towards the back part of the head, the neck, and the arm-pits.

The peculiar seat of this affection is in the scalp: it is exceedingly obstinate, and resists most of those means which remove the preceding affections. *Tinea.*

Tinea seems to be, for the most part, an affection merely local. Sometimes, however, symptoms of the same kind appear simultaneously in other parts; such as scabby excoriations around the mouth and nose, on the cheeks, the chin, and around the ears; rugosities or warts on the face, a swelling and eating sore on the edge of the eyelids, and different chronic affections: it often accompanies the scrophula, rachitis, phthisis, &c.

The principal seat of the malady seems to be in the adipose tissue of the skin. According to the anatomical researches of Murray, it does not appear

pear that it exists primitively in the bulbs of the hair.

The only difference between this affection and herpes is, that its seat is different; and it is to be remarked that it takes place at an age when herpes rarely appears, and at which all derangements show themselves towards the head.

When the disease is merely local and of short standing, it may be removed by attention to cleanliness, and, by the use of some oleo-mucilaginous applications; but if it appears to resist these, it will be necessary to employ substances capable of exciting in the part a mode of action different from that which constitutes the disease, and which is often perpetuated by the force of habit. On this account vesicatories, alkaline solutions, and solutions of metallic salts, plasters made with the oxides of mercury, and antimony, &c. are often successful. Tinea is cured also by tearing out the bulbs of the hair; which occasions a very strong local irritation: but it is always possible to obtain a similar effect by means less painful and more methodical than the application of a cap lined with pitch; which besides is not infallible.

When the disease is of long standing, and combined with affections of the skin, of the glands, and of other organs, the treatment must be longer continued. Apprehensions must always be entertained

tained of checking too abruptly an habitual mode of action, and recourse must be had to the general means pointed out in the method of treating herpes.

82. There is still another cutaneous affection, exceedingly rare at present, but which is here noticed in order to show to what kind of disease the skin may become subject by a concurrence of particular circumstances.

This affection commences by rough tubercles, with cracks in the skin, which commonly appear in the face; the patient soon experiences a general heaviness, with great indolence, and irresistible drowsiness. At a later period, the breath becomes exceedingly fetid, the urine is thick and turbid, and symptoms of satyriasis manifest themselves.

In the course of time more tubercles appear, and assume a greater thickness; the cracks in the skin become deeper, and the hair soon drops off.

As the disease advances, the patient experiences a violent itching in the toes, the knees, and sometimes even in the face; the cheeks then become red and swelled; the eyes are dull, and hollow; the skin of the forehead acquires more thickness, and exhibits deep wrinkles; blackish tubercles appear in the alæ of the nose; the lips swell, and the whole skin soon becomes thicker.

At a more advanced stage of the disease the tubercles

bercles of the cheeks, of the chin, fingers, &c. exhibit successive ulcerations, which become deep, extend, and at length terminate in the loss of certain portions of the limbs. In this state the functions soon become deranged, and the patient falls into a slow and gradual decay, which at length terminates in death. *Elephantiasis, red leprosy of Cayenne.*

This disease takes place more readily in warm damp countries; it was formerly common in part of the East and in Greece; it prevailed also in Europe, some centuries ago; and is now met with in several countries of America. The circumstances which seem to contribute most powerfully to produce it are: the action of an atmosphere habitually warm and damp on ignorant and miserable persons confined in gloomy and low habitations; dirtiness in regard to clothing; food of a bad quality, &c. Its development may be favoured also by cohabitation with those affected with leprosy.

83. We must here add another disease of the skin, which has this peculiar property, that it can be transmitted by immediate contact, either of the persons affected with it, or of clothes or other articles they have touched. This malady is found, in particular, among people badly clothed, who live poorly, and who reside in confined damp and
obscure

obscure habitations ; in prisons, hospitals ; and in countries where, in consequence of the rude state of civilization, little or no attention is paid to cleanliness, &c.

Its development, which for the most part is gradual, takes place in every part of the body, the face excepted. It generally begins in the hands, in the interfices of the fingers, and at the bend of the wrists. It announces itself by a slight itching, which gradually increases especially towards evening, and in the night, by the action of heat, and of any stimulant. Pustules, either single or collected in spots, smaller than a grain of millet, or of a diameter somewhat greater than that of a lentil, and nearly of the colour of the skin, soon after make their appearance ; they are round, exceedingly hard at the root, rough to the touch, pyramidal, and have a vesicular and crystalline summit. When the vesicle breaks spontaneously, or is lacerated by the nails, it discharges a whitish serous matter, and sometimes a little blood, which concretes into a small, dry, brown scab. The itching spreads, and pustules soon arise in other parts of the body. In the large pustules the summit remains humid, and becomes covered with a large crust, under which a serous matter, sometimes turbid and puriform, is accumulated. Several pustules, which were at first distinct, unite together and form one scab of greater extent, and sometimes a large ulcer.

The

The miliary pustules are rarely confounded. At length the intervals between the scabby or still crystalline pustules are speedily filled with rents made by the nails. The fissures, which are scabby and rough, would soon disappear were it possible to resist the itching.

The itch is often not so much a disease as an inconvenience, and hardy rustics, accustomed to pain and labour, live under it in a state of indifference. However, when it commences with much impetuosity, and when it acquires by length of time a high degree of energy, those affected with it often pass whole nights without sleep, incessantly tormented by a dreadful and as it were convulsive itching. When this state continues for a long time, its effects diffused throughout the whole constitution may produce a general derangement, and give rise to chronic diseases often exceedingly severe.

In some cases, an itchy eruption like many others has been seen to determine the cure of organic diseases, or diseases purely nervous. Inoculation for the itch, under this point of view, has even been much in vogue. This practice, though founded on a false theory, has however often proved very efficacious. It may indeed be readily conceived how much advantage might be derived from an irritation of the skin so powerful and so extensive. But we must not consider as itchy all those
spontaneous

spontaneous eruptions, the manifest benefits of which have caused this practice to be adopted. At the end of fevers, and particularly those of the intermittent kind, of catarrhal affections, and of various chronic phlegmasiæ, the skin often becomes covered with a general eruption, sometimes attended with itching; but it is always distinguished from real itch by its rapid and universal eruption; by the form of the pustules or papillæ; by its being spontaneously cured, and by its being free from any contagious quality.

The itch, when once established, is seldom cured of itself. Like all chronic diseases, and particularly those of the skin, it has its alternate periods of abatement and exacerbation, according to the seasons, temperature, and times of the day, the quality of the food and drink, &c. It may even disappear entirely by the sudden development of an acute disease, and re-appear after its termination: if the acute disease be of long duration, it perhaps may never re-appear at all. But, in general, real itch is never cured but by the application of some means which exercise an action on the pustules themselves.

A simple, recent, and merely local itch may be suddenly checked by the destruction of the first pustules which begin to appear, or by friction with irritating ointments; such as that made of sulphur or mercury combined with hog's lard, and with

decoctions of bitter plants ; as tobacco, elicampane, patience-dock, lead-wort, &c.

But when the disease is of very long standing, it may be dangerous, as in every other case, to check abruptly an inveterate habit ; and the treatment must be continued for a long time, without interruption, and be conducted with great care.

Whatever be the remedy employed in the treatment of the itch, it is not uncommon, after friction has been employed for a short time, to see pustules arise which exhibit no characters of the itch. This is observed, in particular, on persons who have a delicate skin. This exanthema, excited by the irritating friction alone, is often mistaken for a new eruption of the itch, and causes the treatment to be prolonged ; but it yields only to the application of means calculated to diminish the irritation of the skin ; such as baths, oleo-mucilaginous ointments, fine linen, &c.

After the cure of an inveterate itch, the patient sometimes remains subject to pustulous eruptions, especially in spring and autumn. These exanthemata, which are exceedingly variable, never exhibit the character of the itch ; are not contagious, and disappear spontaneously. It is not improbable that these consecutive eruptions have induced nosologists to admit metastatic itch, critical itch, &c.

An insect of the nature of the *acari* has been observed in the vesicle of the itch, or at least very
near

near it. Naturalists, who have assigned to it a specific character, vary in their descriptions; so that there may be several kinds of *acarus exulcerans*.

But however this may be, the development of the itch and the irritation it produces on the skin cannot be ascribed to the presence of these animalcula, since they are not found in all the varieties of the itch; and when they exist, it is probable that it is merely because the place is suited to them, or because they are found naturally in the itchy serosity, as other animalcula are in the sperm; the blood, &c.

84. We now come to the last order of Phlegmasiæ, which assume their special character merely as a consequence of different kinds of phlegmasiæ. The individuals whom they attack, in preference, may be arranged into three classes:

1st. Those who have a delicate constitution, slender limbs, a high degree of nervous sensibility and great vivacity, and who are subject to hypochondriac affections or hysteric melancholy; a peculiar weakness in the pulmonary organ, announced by a feeble acute voice; a shortness of breath; frequent constriction in the bronchiæ, the trachea, and the larynx; those who experience frequent spitting of blood, who have a strong propensity to venereal pleasures, masturbation, &c.

2d. Those who from infancy exhibit striking

symptoms of scrophula and rachitis, and who at the period of puberty experience an habitual difficulty of respiration, a dry, irregular cough which daily becomes more troublesome, without pain in the breast, and attended with a striking mitigation by the spontaneous eruption of affections of the skin, or of the exterior glands; those who with these characters have always a pale complexion, a fibilating voice, and red cheeks.

3d. Those who exhibit a catarrhal constitution, with frequent colds, who have a delicate, smooth, white skin, who experience an habitual heaviness, indolence, &c.

These three kinds of original disposition seem often to have been the effects of hereditary transmission.

The influence of these dispositions is increased also : by speedy and premature growth ; a vicious conformation, particularly of the trunk, as a narrow compressed chest, projecting shoulders, long slender neck : it is favoured by forced singing, the too great use of wind instruments, the habitual inspiration of an atmosphere charged with pulverulent matters, and particularly metallic substances.

During the first period, variable in duration and sometimes very long, a few slight and obscure symptoms only are observed towards the breast ; a difficulty of lying on one or the other side ; a shortness of respiration, attended with more difficulty in

certain positions; a confined sensation in the breast; a pungent pain when an effort is made to cough; a strong inspiration; a dry gentle cough, which recurs at intervals and becomes habitual, with a little oppression and hoarseness, and sometimes with a spumous expectoration which gives relief: respiration is accelerated by the least exercise; symptoms analogous to those of catarrh take place from the slightest cause; during some days repeated fits of shivering, a great sensation of cold, a strong and sonorous cough, are experienced, with a pain and heat in the breast; expectoration of an aqueous, saline, or sweetish matter, loss of appetite, general lassitude, and fever towards evening. Sometimes the patient experiences a pleuritic stitch; the pulse is hard and close; the face becomes red, the eyes humid, and the oppression and cough are followed by bloody sputa. At other times the patient experiences a sensation of heaviness and uneasiness, a burning pain in the breast, and particularly behind the sternum; oppression and febrile symptoms more or less striking. The pulse is full, sometimes small, always hard and throbbing; a titillation is experienced towards the larynx, which occasions a slight cough; sanguinolent sputa, or a greater or less abundant cructation of florid and spumous blood, with a kind of sibilating ebullition in the trachea, are observed.

After several paroxysms of the same kind, the cough becomes stronger, especially towards evening and in the night; it is generally sonorous and irregular; the voice is hoarse, weak, and sharp; and the oppression becomes greater, particularly after meals.

At this second period, almost all the functions begin to exhibit symptoms of derangement; the patient becomes sleepless, the appetite is lost, and an obstinate constipation takes place; the pulse is habitually frequent, with an acceleration towards night; the skin is hot and arid, particularly in the palms of the hands and the soles of the feet; the cheeks acquire a bright red colour, and the urine deposits a furfuraceous and reddish sediment.

All these disorders gradually increase, and irregular exacerbations take place; expectoration is then suppressed; an acute pain is experienced in some parts of the breast, with a continual heat. The sputa exhibit great variation in their colour, smell, and consistence; sometimes they present striæ of blood, membranous films, and small globular bodies containing a matter more or less thick or calculous.

At length, at a third period, the fever becomes continued, and the pulse small and close. Towards noon and evening it increases, and is accompanied with shivering; the skin is hot and dry,

dry, the oppression is more fatiguing, and red spots appear on the cheeks. The patient experiences a striking alleviation at night and in the morning, with tranquil sleep and agreeable dreams.

During the slow progress of the disease it is observed that the sweat becomes greasy, clammy and fetid, universal or confined to the breast; the urine is highly coloured, deposits a great deal of sediment, and is covered with an oily pellicle. The expectoration exhibits characters very much varied; it is of an ash or blackish colour, viscid or in detached flakes, homogeneous or differently mixed. A frequent diarrhœa, which seems to come on alternately with the sweats, soon takes place. The patient then experiences a rapid consumption. The eyes become hollow and bright; the nose sharp, pointed and red; the visage is pale, livid, and meagre, and sometimes swelled. All the muscles waste away, the breasts sink down completely; the projection of the ribs, the retraction of the hypochondria, and the depression of the sides of the abdomen, are very remarkable; and the abdominal arteries exhibit at intervals convulsive throbs, which are often exceedingly strong.

Sometimes the legs swell; the shoulders in general are remarkably prominent, the fingers become slender, the articulations project, and the nails are long and hooked; the hair frequently

drops off. At this period excessive excretions of different kinds take place: such as salivation, diabetic flux, diarrhœa, purulent sputa, &c. A great heat is experienced in the tonsils and throat, with redness, great sensibility, and aphthæ in the mouth and on the tongue.

The patient, at length, falls into a sort of idiotism; forms plans which he continually alters; becomes peevish, capricious, and whimsical; and death terminates his existence, for the most part at an unexpected moment, after an hæmoptysis or sudden movement, after some days of flight delirium, and sometimes when in the perfect use of his senses.

On opening the body the pulmonary tissue is found to be destroyed throughout a greater or less extent, by a large ulcer, the sides of which are frequently hard and tuberculous. This ulcer for the most part occupies the upper and posterior part of the lungs; an effusion of purulent matter is found in the cavity of the thorax; and in the substance of the lungs, and among the bronchial vesicles, pus, tubercles more or less compact, hard spherical bodies, the size of which is exceedingly various. The smallest are whitish, smooth, and as it were cartilaginous; those of the middle size contain a purulent matter; the largest are in general hollow, and their moist cavities communi-
cate

cate with each other, and with those of the bronchia. Sometimes the lungs appear compact, and corroded like wood gnawed by worms.

The disease generally makes its appearance between the age of fifteen and thirty-five, a period at which the predominance of the vital energy seems to proceed from the head towards the breast.

The progress of this affection, for the most part, is very tedious; it continues sometimes several years, with very striking intervals of remission during the first periods. A variety of circumstances may contribute to render it more or less rapid: it is accelerated by the impression of cold often repeated, deviations from regimen, excessive fatigue, venereal pleasures, or melancholy moral affections; fevers, or other acute diseases. That which exhibits the scrophulous character is, in general, slower than that produced by excess of sensibility in the lungs, or by repeated attacks of catarrh, especially when strong fits of hæmoptysis are combined with it.

The disease, in general, is composed of several paroxysms, which depend on the mode of action successively established in one or more tubercles; and its progress is the more rapid as the number of tubercles which enter into action is greater.

Phthisis.

The

The mode of treatment must be varied according to the circumstances which seem to concur most towards the development of the disease, and to its essential character. But the following general means ought to form a part of it: the patient must be placed in such a situation as to enable him to breathe that atmosphere best suited to the weak or diseased state of his lungs; the strength must be maintained by wholesome nourishment, varied according to the difference of tastes; substances in the state of gas or vapour, known by practice to be salutary, and which act directly on the part affected, should be employed; sinapisms and vesicatories ought to be applied to the breast, in order to maintain there a point of irritation, which may diminish that in the pulmonary organ; and courage and hope should be excited by varied amusements, according to the taste and circumstances of the patient, &c.*

Phthisis cannot be communicated by contact, or by the use of articles which have been employed by a phthisicky patient, even when in the last stage of the malady; and those apprehensions which have induced some to destroy the clothes, furniture, and other effects of persons who die of this disease, rest on no foundation. But it is not prudent, and

* See the Report *Sur la Médecine Pneumatique* in the *Journ. de Médecine*, *venise*, an. 9.

particularly

particularly for those who have a weak breast, to remain long too near phthisicky patients when the disease is far advanced.

All acute affections of the lungs, such as pneumonia, pleurisy, catarrh of the bronchiæ, or wounds of the breast, may terminate in phthisis.

FEVERS.

ERUPTIVE FEVERS.

85. THE different kinds of phlegmasiæ, the history of which has here been given, always exhibit, in one fixed and determinate point of irritation, the immediate cause, or rather the origin, of all the phænomena, whether local or general.

In the following order of affections, a series of general symptoms are seen to make their appearance before any indication of the cutaneous phlegmasia which ought to furnish the specific character of the disease.

86. The first affection which occurs, as forming a continuation of the phlegmasiæ, announces itself by a general indisposition of longer or shorter duration. The patient then experiences a sensation of cold, shivering more or less violent, followed by an universal heat, with an acceleration of the pulse, pain in the head, thirst, painful constriction of the epigastrium, lassitude, sensation in the loins and in the limbs as if bruised.

When

When the local affection is about to develop itself in the face, as for the most part happens, the patient is attacked by a violent cephalalgia, attended with great heaviness of the head, drowsiness, and sometimes delirium. These symptoms generally become worse towards evening, and go on gradually increasing till the second or third day.

After the first period, the patient experiences, towards some point of the skin, but for the most part in the face, a painful sensation of pricking, with tension and ardent heat; the part becomes swelled, assumes a red or a rose colour, inclining sometimes to yellow, which disappears by the momentary pressure of the finger, but when the finger is removed speedily re-appears. The swelling and redness extend irregularly to the neighbouring parts, with acute pain which has a great resemblance to that of burning.

The fever remains, or even increases with the local affection, which progressively extends, or which makes its appearance in very distant parts. It often overspreads the whole face, and even the whole extent of the head. The swelling continues for some time after the redness and heat have disappeared. The whole visage swells, and the tumefied eye-lids entirely cover the eyes.

At an earlier or later period vesicles, containing a serous matter, arise. Under these vesicles the
skin

skin sometimes appears brown, livid, or blackish; at other times it is attacked by gangrene. It often happens also that the irritation is communicated to the sub-cutaneous cellular tissue, and gives rise to abscesses: in the face they are generally small, and appear towards the eye-lids. Sometimes these abscesses are superficial, but exceedingly large, and dissect in some measure the whole skin, as is frequently the case in the legs: the pus is then more viscous, of a yellowish or brownish gray colour, and the flesh appears flabby and discoloured.

At the end of a certain time, but in general towards the eighth or tenth day after the eruption, the local and general symptoms abate; health is re-established, and the epidermis drops off in small scales from almost every place which experienced a certain degree of swelling. *Erysipelas*.

This affection is remarkable for its mobility; it frequently disappears, and a visceral affection takes place, at the same time, particularly in the mucous membranes.

It is very rare during erysipelas that the gastric system is not deranged. On the commencement of the disease a bitterness, for the most part, is experienced in the mouth; the tongue becomes covered with a yellowish crust; and the patient complains of loathing, nausea, bilious vomiting, and great sensibility towards the epigastrium.

In

In all these cases emetics and gentle purgatives generally remove the disease, or contribute to render it milder.

It is not uncommon to see the disease in the middle of its progress assume a malignant character; this is more particularly the case in feeble or exhausted individuals, and in old persons. A series of phænomena, which indicates derangement and weakness of the nervous action, then takes place: such as drowsiness, delirium, prostration of strength, subfultus tendinum, small pulse, petechial eruptions, gangrenous spots, &c.: all these symptoms evidently announce a fatal termination. In this case vesicatories and other stimulants may be of use.

When the affection is very acute, without gastric or adynamic complication, it may be proper to weaken it by bleeding, by abundant aqueous beverages, and by gentle laxatives. In erysipelas of the face, it is of importance that the patient's head should be kept elevated: when there is neither abscess, nor ulcerations, &c. the greater part of the topics employed are useless.

Erysipelas appears to be epidemic only when it prevails in combination with catarrhal affections which exhibit that character; it often recurs sometimes in the same individual, and readily acquires a sort of periodicity.

According to this view, erysipelas appears as an

essential fever, which always accompanies a phlegmasia of the skin; but under many peculiar circumstances a similar phlegmasia may take place without any antecedent fever, merely by the application of irritating substances to the skin: such as fire, boiling water, the stinging of some insects, a slight wound, &c.

87. We must arrange also in this class an affection, sometimes very acute and painful, which seems to participate of erysipelas and herpes. Its attack is suddenly announced by acute pains, with or without fever; the affected part appears as if burnt, and becomes covered with very small whitish vesicles, rough to the touch, and having round their base a red shining circle. These vesicles form themselves into clusters separated and inclosed by a reddish ring; they occasion a sensation of pricking or shooting pains; and after desquamation there remains in the whole part an itching more or less violent. The eruption, for the most part, occupies the abdomen, flanks and loins in the form of a girdle. *Zona (the shingles).*

88. The disease of which we are now about to give the history is almost always epidemical; it appears most frequently in autumn, during winter, and in the spring. It is observed ofteneft among children, women in the indigent class, and persons who

who reside in damp places : in general, it never affects the same individual more than once.

This affection commences with all the symptoms of an acute fever ; the patient sometimes experiences a pain in the epigastrium, and for the most part an uneasy sensation in the throat, with a redness of the tongue and gullet, and aphthous excoriations : the fever exhibits an almost constant exacerbation towards evening and night.

Between the second and fourth day an eruption takes place of broad, flat, red spots, scarcely elevated above the skin, and often pruriginous. These spots assume a darker colour, and gradually extend from the face to the neck, the breast, the arms, the trunk, and then to the inferior limbs ; and at length cover the whole skin, so as to give it a crimson colour. The skin becomes white when pressed by the finger, but immediately resumes its redness.

The febrile symptoms rarely decrease during the eruption : the colour of the skin grows darker ; the feet and hands become swelled, stiff, and painful ; the face and eye-lids often swell also.

Towards the sixth day the redness of the skin becomes fainter, according to the same order as that in which it increased. All the febrile symptoms gradually disappear, and the pain in the throat subsides. The epidermis drops off in small furfuraceous scales, from the face, the neck, and

the breast, and in larger pieces from the feet and hands.

Sometimes, after the termination of this disease, about the fifteenth day or even later, the patient, especially if he has been exposed to cold, falls into a sort of languor; the urine becomes small in quantity, thick, full of sediment, and reddish; the face and eye-lids tumefy; a whitish soft swelling extends to every part of the body; and a ferous matter is sometimes effused into the peritonæal cavity or into the thorax.

This affection, in general, exhibits a rapid but mild progress; in some cases the pain in the throat becomes so intense, that it alone ought to engage the whole attention of the physician, and may exhibit all the phænomena of angina.

Like erysipelas, this affection begins sometimes with all the characters of derangement in the gastric system. In this case, an emetic often brings the disease to a state of simplicity, and renders its progress easier.

Sometimes the affection, at the commencement, exhibits all those symptoms which produce derangement and weakness of the nervous action, as we have seen in some cases of erysipelas: the soreness in the throat may then assume all the characters of malignant angina.

89. Another eruptive fever, commonly epidemic,

mic, shows itself more readily in winter, and continues till the summer solstice. In general, it attacks only once during life, and, for the most part, in infancy.

It begins in general towards evening, with a shivering more or less violent, soon followed by a general heat, with thirst, loathing, anxiety, vomiting, &c. Hoarseness, a dry and frequent cough, difficulty of respiration, and repeated sneezing, soon ensue. The eye-lids become swollen and red, and the eyes watery. The patient experiences drowsiness, heaviness of the head, and a pain towards the fore-part of it. As in catarrhal affections, all these symptoms increase towards evening.

The intensity of the fever increases till the third or fourth day, when the eruption begins to appear, first on the face, and then successively on the other parts, in the same order as that of scarlatina. This eruption is composed of small red points, sensible only to the touch, and which unite into clusters.

Towards the third day of the eruption the red colour of the skin becomes brown; and towards the fifth it entirely disappears, and is succeeded by a slight desquamation.

It is rare to see the fever, or the symptoms of catarrhal affection, cease after the eruption. They increase sometimes even after the desquamation. In some cases, the cough and difficulty of respira-

tion increase to such a degree as indicates an affection of the lungs; at other times a diarrhœa and obstinate ophthalmia take place.

In some patients, the eruption appears after the second day over almost the whole body. The cough and ophthalmia increase, and are accompanied with great oppression, a violent heat and agitation; the skin is dry, the throat becomes of a dark red colour, and the eruption disappears towards the end of the fourth day. The fever then abates, but the ophthalmia increases as well as the cough and oppression. The patient has scarcely any thirst, and no expectoration takes place. He experiences looseness, extreme weakness accompanied with delirium, and soon falls a sacrifice to the disease. Death ensues sometimes in the first or second period; but for the most part in the second or third week. It is generally preceded by laborious respiration, dysentery, gangrene in the rectum, and particularly in the genitals among females, ulcers in the mouth, &c. On opening the body, the lungs are found soft and flabby, the blood-vessels distended, with adhesions, gangrenous points, &c. *Rubeola* (measles).

This fever, which is specially catarrhal, is in general not very dangerous, and terminates spontaneously in seven or eight days; but when it prevails with epidemic fevers of a bad character, when it attacks very young children of a weak constitution,

tion, and when it announces itself by symptoms marked with adynamia, it frequently becomes fatal.

90. Variola (small-pox), a disease well known, is a contagious epidemic malady, which in general affects every individual, but only once, who live a certain number of years: it for the most part comes on in infancy.

Its attack generally commences at noon by a fit of shivering, which is afterwards repeated, and is soon followed by a continued fever, with ardent heat; the eyes become red and brilliant, the face is slightly swelled; the child complains of a pain in the head, lassitude in the back and limbs, pain in the epigastrium, and appears as if asleep. In general, it experiences nausea, vomiting, and often some convulsive movements, especially towards the second or third day.

The fever gradually increases with sweats till the third day: at this period small red specks, which gradually rise and thus form pustules, are observed first on the face. The eruption spreads by degrees over the neck, the hands, then to the trunk and lower limbs; and towards the fifth day it is diffused over the whole body. The fever then abates and disappears. The pustules increase in number, become larger, and towards the fifth day their summit exhibits a small vesicle, containing a liquor

almost colourless. These vesicles still increase in size with a small depression in the middle, and towards the eighth day assume a spheroidal form. At this period the bottom of them is surrounded by a red circle, which, when the pustules are numerous, colours the whole skin. Sometimes the face swells, and the tumefied eye-lids cover entirely the eyes. An obstruction in the throat often takes place also, with hoarseness, a difficulty of deglutition, and salivation. The matter of the pustules, which was at first limpid, becomes in the mean time opake, then white, and at length yellowish.

Towards the eleventh or twelfth day, each pustule exhibits, at its summit, a small black speck, which bursts, and affords a passage to the matter; the latter becomes dry, and forms a small black scab. The portion of matter which remains in the pustule becomes dry also, and at length falls off with the vesicle, leaving on the skin a brownish spot, which is slowly effaced. Sometimes these scabs drop off at a very late period; and the part which they covered, destroyed to a considerable depth, exfoliates in small scales, and remains hollow for ever.

In proportion as the swelling of the face decreases, a similar swelling often takes place in the hands and the feet. In general, the pustules break only in the face; in other parts the matter dries in the vesicle, and falls off along with it. When the
pustules

pustules are very numerous, especially in the face, the fever often recurs towards the eleventh day, and does not cease till after their desiccation.

Such is the most common progress of the small-pox. This affection, in general, is milder as the eruptive fever has been slighter, the eruption less abundant on the face, and as the insulated pustules are more fully developed.

But it is not uncommon to see this progress interrupted: the fever, at first, is often too violent, and is accompanied with a greater degree of drowsiness, delirium, repeated vomiting, and numerous epileptic fits. The eruption is premature, or too slow; takes place simultaneously in every part of the body, and is sometimes attended with a scarlatine efflorescence. The pustules, still very numerous, especially in the face, but much smaller and less prominent, form often clusters entirely similar to those of the measles. The fever in this case experiences only a very slight remission; it again acquires a degree of exacerbation towards the sixth day, and continues violent till the end of the disease.

The vesicles appear at an earlier period; they remain flat, are confounded with each other, and the face sometimes seems rather to be covered with one vesicle than with a number of pustules. Those which are insulated do not exhibit a red ring at the bottom, and the intermediate parts of the skin

are generally pale and flabby. The affection of the throat and the salivation are always carried to a high degree; in children these symptoms are often succeeded by a continual diarrhœa. The swelling of the face soon takes place, becomes considerable, and does not abate till towards the eleventh or twelfth day. The matter of the vesicles thickens into brown or black crusts, which slowly detach themselves. The subjacent parts then undergo a desquamation, which leaves on the skin permanent marks of this troublesome malady. The pustules which arise in other parts of the body, though further from each other, do not assume a great degree of development; the liquid they contain never acquires a purulent consistence, nor a yellowish colour.

During the exacerbation of the fever petechial eruptions, red or purple spots, vibices, and gangrenous spots are observed; and sometimes hæmorrhagies take place.

Under this form, the disease is always exceedingly dangerous, and frequently becomes mortal. When not attended with a fatal issue, it often leaves behind it abscesses, obstinate ophthalmiæ, amaurosis, obturation of the lacrymal passages, &c.

The two forms here described, distinguished by the improper denominations of *discrete* and *confluent* small-pox, are the two extremes of the malady. They contain between them a multitude of shades

shades, which differ by imperceptible degrees, according as they approach to the one or the other.

The small-pox, in general, is less dangerous in children than in adults; in spring than in summer and autumn; it is more destructive when it prevails with malignant diseases.

The severity of the disease, *cæteris paribus*, depends in a great measure on the quantity of pustules by which the face is covered; and it is certain that heat is one of the principal causes of their development. It is therefore always proper, before and during the eruption, that the patient should remain out of bed, with the head bare, lightly clothed, especially towards the upper extremities, and exposed as long as possible to the impression of the cool air. It is also of great advantage, in preventing too confluent an eruption on the face, to cover well the lower extremities, and even to apply various stimulating substances. Different stimulants conveyed to the gastric system are also very useful, as they tend to diminish the irritation of the skin. For this reason, emetics are beneficial in the commencement of the small-pox, and gentle laxatives (such as sweet muriate of mercury) during the eruption. Bleeding is sometimes necessary, and even indispensable when the fever announces itself with great violence in a vigorous and sanguine adult.

The small-pox, for the most part, exhibits an epidemic

epidemic progress; it is propagated from one person to another; affects all those individuals who have never before been attacked by it; and then disappears for several years.

Variolous epidemix commence, for the most part, in the spring, increase in summer, abate in autumn, and commonly disappear in winter, to begin again the spring following. They differ much from each other in different years, and even in different seasons. They are, in general, more violent according as they begin later in winter; and they become more dangerous in summer and autumn, especially when malignant fevers prevail.

The small-pox is epidemical only by contagion. The contagious principle resides essentially in the matter produced by each pustule. This matter possesses the infectious principle from the time of its formation in a transparent fluid, till that of its desiccation in the vesicles. At that period the scabs, the scales, and, in a word, all the remains of the desquamation, become permanent sources of contagion. These remains, when reduced to dust, can retain their quality for a great number of years, and, if accidentally disseminated in the atmosphere, may spread the infection, and, when transported by the winds, may even convey it to a great distance.

To produce the small-pox, it is sufficient that a particle of its pulverulent product be applied to
any

any part naturally humid, or accidentally deprived of its epidermis; and it is probable that the ærian passages are those on which the infection oftenest produces its effect.

91. A few years ago, *inoculation*, then introduced, was a great benefit to the human race. Of a hundred children inoculated, ninety-nine had the discrete kind of small-pox. Inoculation was attended with this advantage, that it could be performed at the age when the small-pox is commonly mild; it afforded an opportunity of choosing the most convenient season and time, and of avoiding every affection that might have counteracted its progress.

The quantity and quality of the variolous matter necessary for inoculation are things of indifference. The smallest quantity may be sufficient to produce the disease, and a larger quantity can do nothing more. The quality of the variolous matter is always the same in all individuals. It is the result of a specific mode of action, and can in no manner participate in the supposed bad humours which might exist in the child by whom it is furnished.

Of the different modes of inoculation, the following has been preferred: A pustule in a state of maturity, and not yet desiccated, is pricked with the point of a lancet, and this instrument, charged with a small limpid drop of the fluid, is then introduced

roduced obliquely beneath the epidermis: when drawn out, care is taken to apply the thumb to the orifice, in order to retain the matter. The puncture is often so slight that no blood issues from it.

The child subjected to this operation was not confined to any particular regimen; it was allowed to play in the open air, care only being taken to guard it from excessive heat, too abundant nourishment, and too long sleep.

The phænomena of the disease appeared in the following order:

The second day, a slight trace of the puncture.

The third, a small yellowish red speck, with a slight lenticular hardness, beneath the epidermis.

The fourth, a hard rugous pustule, of a bright red colour, covered with serous vesicles perceptible by the microscope; an itching around it.

The fifth, the pustule white at the summit and red at the base; the principal vesicle surrounded by several others smaller in size. A pain begins to be felt under the arm-pit; the colour of the face frequently changes; the pulse becomes variable; the child exhibits alternations of sadness and liveliness, &c.

The sixth, the principal pustule, filled with a limpid serosity, becomes very prominent, and rises into a point; the itching around it and the pain in the arm-pit are more sensible.

The

The seventh, the pustule, of a larger size, becomes opaque; its red areola acquires more extent; the patient experiences a sensation of general lassitude, with slight fits of shivering, transient heats, heaviness of the head, and sometimes pain in the epigastrium.

The eighth, the pustule breaks and suppurates; the fever increases, and the following symptoms are observed: agitation in the night-time; sleep interrupted; starting up in bed, and sometimes slight convulsive movements.

From the tenth to the twelfth day the eruption is general, and the further progress of the disease is the same as that of the most benign variolæ. At any rate it is rare that it becomes confluent, and has a fatal termination.

92. At the period when inoculation was introduced into Europe, a chimerical project was formed for exterminating the small-pox. But even if it had been possible to inoculate, at the same time, all those never attacked by the small-pox, the succeeding generation would still have been exposed to the contagion from the preserved remains of the old variolous pustules.

However, what was then an empty dream may now be realized; for since the vaccine inoculation has been employed, every thing gives us reason to hope that, when universally diffused, it will completely

completely oppose the development of the small-pox.

The advantage of inoculation was founded on this circumstance: that the development of the small-pox destroyed in the individual the disposition for again contracting it. That of the vaccine depends on this principle, that it destroys the disposition for the small-pox before its appearance.

The vaccine is transfitted in the same manner, and follows nearly the same progress as that of the inoculated small-pox.

On the second day scarcely any traces of the puncture appear.

In the course of the third a small rose-coloured spot is observed, and the finger perceives a small indurated point, which increases with the red spot, and soon forms a small pustule.

From the fifth to the sixth day the tumour increases, and a circle of a bright white colour, which terminates the circumference of the pustule, is observed. This circle forms a roll which rises, becomes broader, and gives to the surface of the pustule the appearance of a narrow capsule, of a satin white colour towards the edges, and brownish gray towards the centre, where a trace of the puncture still remains.

On the eighth day the matter of the pustule is perfectly limpid; it appears to be contained in small cells or *areolæ*, which communicate with

each other, and, when an aperture is formed in them, exudes slowly. This serosity serves to propagate the matter by inoculation.

From the eighth to the tenth, and even the eleventh day, the tumour and pustule gradually increase. The redness and hardness extend, and form a sort of erysipelatous areola, hard, exceedingly sensible to the touch, and which sometimes is two inches in diameter. At this period the individual often experiences a pain under the armpit, and the glands in that part are found to be swelled. Sometimes pains in the head take place, with general lassitude, loathing, nausea, and also vomiting, but rarely. In some cases very evident febrile symptoms are observed. This general indisposition never lasts more than a day; and in children below the age of eight or nine years scarcely any signs of indisposition are seen.

Towards the eleventh or twelfth day the pustule becomes corrugated, loses its transparency, and assumes the colour of a dead leaf. The matter, which is turbid and thick, can no longer give rise to the same series of phænomena; it becomes dry with the pellicle, and forms a thick brownish crust, which detaches itself between the twentieth and the twenty-fifth day. The desquamation, which then follows, leaves on the skin a depression, which, without doubt, will always remain.

There never yet has been an instance of a person who has had the vaccine being attacked by
the

the small-pox, notwithstanding the trials made for that purpose, either by inoculation or by intercourse with persons infected by the small-pox ; so that the efficacy of the vaccine, as a preservative from the small-pox, can no longer be doubted*.

93. The four diseases, the history of which has here been given, are characterized by a general derangement, or febrile state, which continues for several days before the development of the local affection ; and it is by this circumstance that these affections are distinguished from phlegmasiæ. In these fevers the derangement of the gastric system is peculiarly remarkable ; and an affection is always observed in some points of the mucous system.

All these diseases, erysipelas excepted, are epidemical, and never attack the same person a second time : the last is highly contagious. In a word, they all assume more or less the character of the prevailing diseases.

In the history of the fevers about to be given, we shall speak of many other eruptions, which appear to be only accidental ; which exhibit no regularity in their progress, and which ought to be considered merely as particular symptoms of the diseases which they accompany.

* The reader may see in a work by C. Hutton the method to be followed in the vaccine inoculation. A complete history of this valuable discovery has been given by C. Moreau.

CONTINUED FEVERS.

94. IN cold, dry, elevated regions, exposed to the northerly winds, in winter and at the commencement of spring, among adults of an athletic constitution, accustomed to succulent animal food, generous wines, &c. who live in a state of indolence, or who have suddenly abandoned a very active life for one of inactivity, who have been some time deprived of an habitual sanguinolent evacuation; at the period of the first menstruation retarded or difficult; during pregnancy, &c. some individuals begin sometimes to experience a general sensation of heaviness, lassitude, and numbness, with flushes of heat in the face, wandering pains in the head, vertigo, ringing in the ears, drowsiness, agitated sleep, &c. In this case, if these symptoms increase, or, what is more common, if the individual be suddenly exposed to an excess of intemperance or fatigue, to the impression of an ardent sun on the head, or to sudden cold, especially when in a state of perspiration, a violent fit of passion, &c. the following symptoms of disease may take place. Continued moisture of the body, preceded or not by shivering; sweats; pulse frequent, hard, elevated, and often unequal;

face swelled and highly coloured ; beating of the carotid and temporal arteries ; eyes projecting and watery ; pains in the head ; watchfulness ; tongue moist, red, or whitish ; thirst moderate ; urine small in quantity, and for the most part red ; in young individuals, disturbed sleep, subfultus tendinum, slight convulsive movements.

Sometimes, at the end of twenty-four hours the patient experiences moisture on the body, with sweats, or the urine becomes nebulous, and the disease terminates. Sometimes hæmorrhagy takes place, and towards the fourth day the nature of the sweats and of the urine announces a resolution of the disease, which is often effected without any sensible crisis. In other cases, there is a successive and gradual increase of the symptoms till the fourth day ; the patient then experiences a violent pain in the head, which often produces phrenetic delirium ; the tongue is dry, with ardent thirst carried to the utmost degree, anxiety, difficulty of breathing, great agitation, and often a hæmorrhagy. The urine becomes turbid and sedimentous, and the sweats indicate for the seventh day a salutary crisis. A simple exudation of blood from the nose announces, with certainty, for the seventh day an abundant and critical hæmorrhagy. But if the disease retains all its intensity beyond the first week, it then never terminates but in the course of the second, towards the eleventh or the
fourteenth

fourteenth day, especially if about the end of the first week the urine begins to become nebulous. Sometimes, however, the affection is prolonged, and changes into a local phlegmasia, &c.

This disease in general follows a *continued* progress, without remission or exacerbation. It commonly terminates by sweat or hæmorrhagy, and sometimes without sensible excretions. *SYNOCHÉ.*
Inflammatory fever.

95. There is one fever very common, which is observed in all climates, at all seasons, among all individuals, and which however is more prevalent at the end of summer and in the commencement of autumn, after violent and long-continued heat, which attacks more readily individuals of a bilious constitution, accustomed to abundance of animal food, and who lead a sedentary life, or those who are habituated to coarse food and to hard labour.

It frequently announces itself a long time before by heaviness, numbness, and pains in the limbs, which increase in the evening or at night, with a sensation of pricking and shivering at intervals. The patient experiences a great sensibility to cold, even during the greatest heat. The face is often observed to be pale, and sometimes red, or to be alternately so, especially among females. A propensity to sleep comes on, and sometimes pains in the head. The patient experiences a

bitterness in the mouth, particularly in the morning, and the tongue becomes covered with a whitish or yellowish mucus; loss of appetite, disgust for animal food, and a desire for vegetables and acids; fetid eructation, nausea, retching, an heavy tension or acute pain in the epigastrium, constipation or diarrhœa. The patient is much agitated in the night-time, experiences sudden anxiety, startings on the approach of sleep, and some irregular paroxysms of fever.

This aggregate of symptoms, which announces in general a derangement of the gastro-hépatie system, frequently disappears by the effect of an emetic, or spontaneously after a series of vomiting, and stools, often bilious, abundant sweats, and a discharge of sedimentous urine.

But, in this state of things, after excessive labour, prolonged watching, venereal and other intemperance, fits of passion, melancholy affections, improper remedies, exposure to an infectious atmosphere, and sometimes without any known cause, these first symptoms for the most part become aggravated, and change into a regular disease, the progress of which we shall here describe.

It announces itself by shivering, followed by heat: the cold varies from simple shivering to tremor and agitation of the whole body. This state is not accompanied with a lowering of temperature proportioned to the sensation of cold. The patient experiences

experiences pains in the loins, back, and limbs; the eyes are red, with a bright yellow or greenish tint. Sweats often break out in the face and head; the cheeks assume a dark red colour, with a streak of greenish yellow, which descends from the alæ of the nose to the commissuræ of the lips; the tongue is white or yellowish, sometimes villous, and may exhibit all the intermediate shades between that state and the formation of a thick blackish crust. Symptoms which announce an exalted action of the liver are observed, such as eructation of a bitter, sweetish, and acrid matter; nausea, vomiting of porraceous, yellow and bitter matters; a sensation of plenitude and heat at the stomach; sometimes a simple spasmodic constriction in the epigastrium; at other times heavy and exceedingly violent pains; bilious fetid stools, with colic, often very excruciating; at other times constipation more or less obstinate: the urine is in small quantity, and highly coloured; but it often changes its character in the course of the disease. The patient experiences a greater or less pain in the head, and sometimes with such shooting as if the cranium were ready to split: the pulse is full and accelerated, with a heat more or less acrid of the skin, and sometimes with a sensation of internal ardor, pungent and intolerable. The patient experiences great thirst, and frequently calls for cold and particularly acid liquors. He is dejected disgusted with life, and shows great impatience on the most trifling occasions. Transi-

ent or permanent fits of delirium come on ; he is much agitated in the night-time ; awakes, and starts up in terror.

Of the different terminations of this disease, the most beneficial is that speedily produced by an emetic : after which the anxiety ceases ; the diarrhœa or constipation disappears ; natural stools take place, and the urine is at first nebulous, and then sedimentous, without becoming transparent. The tongue begins to grow clean from the tip to the root, and the appetite and sleep return.

This disease terminates favourably also by an insensible resolution ; by several spontaneous evacuations or vomitings, after a greater exacerbation, followed by critical discharges of urine and sweats ; nasal, hæmorrhoidal, and uterine hæmorrhagies, &c.

A less favourable termination is announced by abundant sweats during the first days. An emetic produces no relief ; constipation or an obstinate diarrhœa takes place ; the urine remains limpid, or merely nebulous at the surface, sometimes sedimentous, and sometimes without any deposit, &c. The fever is converted into chronic affections of different natures.

But the most fatal termination is announced by local, secondary phlegmasiæ, gangrene, internal carbuncles, and conversion into a fever of the most malignant character.

This malady is variable in its duration : it is never mortal of itself, and after a series of regular symptoms

symptoms the patient, for the most part, returns to a state of health. The salutary vital movement evidently shows that expectant medicine is that principally indicated. Active medicine, however, may often prevent or check the disease in the commencement.

This affection, denoted generally under the name of **BILIOUS FEVER**, assumes different forms.

Sometimes, after the usual commencement, there are observed towards evening an increase of heat and other symptoms, commonly without shivering, except towards the critical periods. This exacerbation is more violent every other day, but without a complete remission. In general, the termination is favourable, and for the most part is effected merely by the power of nature, at the end of the first, or in the course of the second or third week. This form is called *continued bilious fever*. It is combined sometimes with phlegmatic symptoms.

In warm climates, among individuals of a very hot and irritable temperament, great sensibility takes place in the region of the heart, with a real cardialgia, violent pain in the head, and a scorching heat in the bowels; the patient experiences extreme agitation, great anxiety, and unquenchable thirst: the tongue is parched, becomes blackish and full of cracks, and phrenetic delirium takes place. This fever, called *ardent* (*causus*), often changes into fevers of a malignant character.

At other times, after the usual commencement,

or after the first form has existed seven or eight days, a paroxysm with shivering takes place every day, recurring either regularly in the evening, at night, or in the morning, or very irregularly in the evening and in the night-time. The duration of the shivering is from half an hour to two hours; that of the heat three, four, or even six hours. The intervals of remission are attended with retching. The paroxysms continue with the same force till the twentieth or twenty-fifth, and rarely to the twenty-ninth day; after which they gradually abate, the shivering decreases and disappears; on the thirtieth, thirty-second, or thirty-sixth day nothing remains but a mere exacerbation. There are then manifested all the signs of a slow and gradual termination, which rarely takes place before the forty-second day; but which is retarded to a later period when the patient is harassed with improper remedies.

The use of emetics seems to be very often indicated in this form, which has been distinguished by the name of *remittent bilious fever*.

96. In low marshy districts, during cold damp seasons, at the end of autumn, among individuals of a weak relaxed constitution, bloated, sedentary, and aged persons exhausted by excess of sensual pleasures, by study, bad hours, and moral affections; debilitated by violent evacuations, some anterior disease, or by wretchedness; who reside in
dark,

dark, dirty, cold, and damp habitations, who use unwholesome food, or food incapable of supplying much nourishment; among the female sex, and particularly those who are young and subject to chlorosis, children in a state of atrophía, &c. a fever often appears, preceded in general, for a certain period, by a train of symptoms exceedingly varied.

The patient experiences frequent alternations of appetite and loathing; often after meals, or in the morning, nausea and vomiting, with a sense of pressure in the epigastrium; a slight diarrhœa, more or less mucous, going off and returning by intervals, is observed, and a frequent evacuation of worms; sometimes aphthæ appear, accompanied with a pain in the gums, and a dry abdominal cough.

Some slight fits of fever often come on in the night-time. These are commonly announced by an apparently better state of health, unusual cheerfulness, and a greater appetite. But after meals the patient experiences a sense of heaviness and distension in the stomach, with swelling and great sensibility in the abdomen; a slight costiveness, thirst, dryness of the fauces, flatulencies, abundant sweats, and particularly between the thighs; slight horripilation in making water.

Towards evening the patient experiences drowsiness, with frequent yawning; his sleep is at first tranquil, but soon becomes disturbed by frightful dreams, &c.

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The eyes are dry or watery ; slight horripilations take place, accompanied with coldness, and particularly in the feet.

These symptoms, after being several times renewed with more or less regularity, conduct to a state of health, or they continue to increase. The patient then experiences a sort of stupor, lassitude, diarrhœa, vomiting, nasal or other catarrh, pustulous efflorescences, ulcerations in the lips, the mouth, and the gums ; an excretion of sebaceous matter from the eye-lids takes place, and that of cerumen from the ears is increased ; the urine deposits a mucous sediment ; sweats come on, especially in the night-time and morning, with an œdematous swelling of the feet, &c. If the slight feverish paroxysms do not bring back health, after a manifest crisis, or in an insensible manner, a fever more or less characterized ensues.

Its attack, which is rarely sudden, general commences towards the close of the day, in the evening, or during the night. The tongue is then pale, white, shining, and sometimes reddish at the root ; red for the most part at the edges and at the tip ; it becomes covered with fungous papillæ, often very prominent ; the whole mouth, the fauces, and larynx, are choked up with a mucous matter of greater or less thickness ; the mouth is swelled and painful, and an excoriation of its interior membrane takes place. Aphthæ appear on the tongue and gums, a sensation of fullness is felt

at the stomach, accompanied with nausea, spontaneous vomiting, and an abdominal cough. The belly is generally hard, somewhat tumefied, and sensible to the touch. The colour of the urine is variable; it is often pale, and the patient in voiding it experiences a shivering, with heat and a sort of difficulty.

The patient experiences also horripilations, weaker or stronger, and repeated at longer or shorter intervals, with shivering, followed by a heat exceedingly disagreeable and a burning thirst. He feels heavy pains in the head, particularly towards the forehead, and often a pain in the feet.

The pulse is exceedingly variable, according to the symptoms of the moment, the approach of crises, &c.

Afterwards, a general debility is observed; the night becomes more fatiguing to the patient than the day; his sleep is interrupted by strange apparitions and continual agitation. He becomes dejected, capricious, sullen, restless, and emits plaintive sighs unaccompanied with pain.

The progress of this disease is exceedingly various. In general it is not very rapid, and sometimes it is very slow; its termination exhibits great variety also, both in regard to the mode and to the time. For the most part it takes place in an insensible manner, after a great number of excretions; the most frequent are sweats during the night and in the morning, accompanied with an
acid

acid smell; vomiting or mucous diarrhœa, urine with a white light sediment, coherent or lateritious. The aphthæ of the mouth degenerate sometimes into ulcers, the gums swell, and a pustulous efflorescence takes place on the lips. The body becomes covered with pustules; furunculi, a purplish exanthema, ulcerations in the sacral and trochanterian regions; an excretion of worms is also observed, and the disease may be converted into a fever of a bad character, or into some chronic affections.

When its conversion into a malignant fever brings on speedy death, the following phænomena are observed on opening the body: the liver is somewhat hard, and distinctly granulated; the sides of the stomach are thick; its interior tunic is blueish, fungous, and covered with a viscid mucus. The intestines appear shrunk, blueish, transparent, and paler in those places which have been strongly distended by the air; the duodenum and the rest of the small intestines are lined with a bilious mucus, and often contain lumbrical worms. The large intestines, covered by an excrementitious pulp, conceal sometimes trichurides. All these worms are generally firm, and in a sound state. The mucous follicles of the stomach, of the duodenum, and sometimes even those of the jejunum and the ileum, are prominent; and towards the ileo-cæcal valve, the cæcum, and its appendix, are collected together in clusters. The orifices of these follicles exhibit as many black points.

These characters are rarely found alone in the body, because this malady in general is not mortal until it has assumed the character of more pernicious affections; and the phænomena peculiar to these affections are then observed.

The disease which exhibits the whole or a part of the symptoms here described, has been distinguished by the name of MUCOUS FEVER. But there are several kinds which unite to these general symptoms a peculiar progress and character, which will not admit of their being confounded.

Sometimes the fever is continued, but slight, with exacerbation towards evening; its progress is very slow, and it continues several weeks. *Continued mucous fever.*

At other times the fever is not very severe; the pulse is weak, and often intermittent; the patient experiences shivering and heat, for the most part without sweat, and ardent thirst. The paroxysms return every day, and sometimes every two days: they are slight to the seventh, the eighth, and even the twelfth; more violent to the twenty-fifth, the thirtieth, and even beyond it; they gradually decrease to the forty-second or forty-fifth, and at length disappear. *Remittent mucous fever.*

97. This account of these three kinds of fever is rather a product of abstraction, than the pure
and

and simple result of observation. From the indefinite variety of simple and continued fevers, which are daily observed, I have selected the most striking and most similar characters, to form three principal *types*, which, like marks placed at certain distances, in this long series of analogous affections, may serve as fixed points to which all the particular cases can be easily referred.

These three kinds of fever disappear spontaneously, and are scarcely ever mortal of themselves; but they often become so by their conversion into a PERNICIOUS fever, the general character of which remains to be given.

98. The pernicious fever of which we are about to trace out the general character, a character in some measure abstractive, is for the most part epidemic. It appears more readily in places where the air is damp, hot, and confined, loaded with emanations from putrid animal or vegetable matters; where great numbers of dirty, wretched or diseased persons are collected and crowded together in a narrow space, in which the air cannot be easily renewed.

It attacks in preference persons debilitated by disease, long fatigue, scarcity, excess of every kind; long grief, a continual state of fear; in a word, by all those causes which tend to weaken the nervous action.

The disease, whether these causes produce their
effect

effect slowly, or whether one of them exercises a sudden and violent action, announces itself by the following symptoms: lassitude, heaviness, indolence, continual cold, pain in the head, melancholy and astonished air, confused ideas, interrupted sleep, loathing, &c.

This equivocal state between health and disease continues for some time, and the patient either recovers spontaneously or by the effect of a vomit, or the affection assumes a more striking character. In this case its attack is announced by slight fits of shivering, a pain with heaviness in the head, vertigo, loss of strength, moroseness, an air of intoxication, and stupidity, fatiguing sleep interrupted by dreams. The tongue is white, viscid, and still moist; the pulse is weak, and nearly in its natural state; respiration is somewhat confined.

After the first week these different symptoms increase, and particularly the prostration of strength. Sometimes a beating of the carotid arteries is observed, or alternations of paleness and redness in the face; the eyes are red, the breath is very often fetid, the tongue is foul, the teeth and mouth have the colour of foot; the pulse becomes very small, and heats come on, with fits of fever, stronger towards evening or night, which more readily affect the tertian type. The skin, which is arid and dry, acquires a more considerable heat, and sooner or later becomes covered with petechial spots similar to flea-bites, or larger, of a red,

a red, brown, yellow, or ash colour, &c. Slight convulsive movements take place in the fingers, almost all the intellectual functions are deranged, and the patient falls into a state of reverie, or of tranquil and silent delirium.

It is a favourable symptom when the urine towards the end of the second week becomes turbid, thick, and sedimentous, when a moderate diarrhœa takes place, with a slight deafness, pulse more elevated, fuller and soft. The termination of the disease is speedier and more certain, and the state of convalescence is shorter, according as the natural progress of the symptoms has been less interrupted by active medicines.

But in the most dangerous cases, after the second week, the symptoms continue and increase. The strength is weakened; the patient experiences a syncope on the least motion; his sleep becomes restless and difficult; he suddenly loses all recollection; the senses are troubled; he is dull of hearing; the eyes, watery, gummy, and nebulous, seem dead and squinting; and one of them is sometimes larger than the other. A subultus tendinum takes place; the hands tremble; the patient shows a desire for uncovering himself, collects the bed-clothes in a bundle, picks the blankets, and makes motions as if driving away flies. The skin is dry and arid; sometimes purplish, blueish, or livid spots appear on different places, with vibices, gangrenous ulcerations in the parts
on

on which the body constantly rests, and sometimes swelling with a collection of matter in the parotid glands.

The breath is fetid; the tongue, dry, hard, cracked, and palsied, cannot issue from the mouth; the patient has no thirst, and is incapable of uttering articulate sounds. The pulse is small, weak, unequal and tremulous. Respiration is difficult, frequent, and irregular, with a motion in the alæ of the nose and pains in the diaphragm. A hæmorrhagy often takes place from the nose, the mouth, the lungs, and the eyes; from the anus, the matrix, the urinary passages, and the pores of the skin: the blood distils drop by drop, and often from several places at the same time.

The abdomen swells up; the fæces are fetid, and the urine is red, turbid or clear: these excretions are involuntary. The body becomes inert, as if insensible; the patient lies on his back with his limbs extended, never again turns, and abandons himself to his own weight, which carries him to the bottom of the bed. The sweat, which exudes in large drops, is clammy and greasy. A gradual destruction of sensibility and motion is observed; an absolute loss of the intellects ensues, and at length a total extinction of life.

These symptoms are aggravated by too active remedies: they seem to be moderated by tonics and stimulants properly applied.

The body after death speedily becomes putrid, and particularly towards the abdomen. All the parts shrink, and are penetrated with a bloody and fat serous matter. Gangrenous spots appear in different parts, with collections of matter in the brain. The shrunk intestines contain fetid fæcal matters, and the worms found there are dead and withered. CONTINUED PERNICIOUS FEVER (*adynamic fever, putrid fever.*)

99. The general signs of weakness by which *continued pernicious* fever is characterized, are often combined with a series of phænomena which evidently announce *derangement* and *irregularity* in the various symptoms of the disease. When this character of *anomaly* and *mobility* in the symptoms predominates, it gives to the disease a peculiar form, which is very remarkable.

During the first days, sudden fits of shivering, a violent heat, and alternations of calmness and anxiety are observed. The ideas become confused, and the sleep agitated. Sudden and violent pains in the head take place, with giddiness, continual dreams, and a starting from sleep. The pulse is very irregular, and respiration confined.

When the disease has made more progress, slight signs of mental absence are observed, with a beating of the carotid and temporal arteries, subfultus tendinum, flushes of heat in the face. The eyes
become

become bright and sparkling ; the feverish fits are very irregular ; the tongue is dry, the skin parched ; sudden cold sweats come on, with convulsive movements ; frequent delirium, and a speedy return to reason.

The disease terminates at periods exceedingly variable, and for the most part without any remarkable crisis or critical evacuations ; the urine, in general, remains limpid, the skin dry, and the fever gradually subsides. There often remains, for a longer or shorter period and sometimes for ever, a debility in some of the organs of the senses, and particularly of sight or of hearing ; a weakness of memory, a kind of imbecility, or other nervous affections.

If the symptoms increase, the patient, in the last stage of the disease, loses his senses, speaks incoherently, and becomes violently agitated. Local gangrenes often appear suddenly, or a læsion of sensibility manifests itself in some particular part. He afterwards experiences the most violent transports ; makes continual attempts to rise, and, if not closely watched, escapes, and sometimes throws himself from the window. These paroxysms are often so violent, that several persons are scarcely sufficient to confine the patient, who on such occasions exerts extraordinary muscular force. At length, convulsions take place in every part of the body, and the patient dies amidst continual agitation.

Pernicious fever seldom exhibits this anomaly or sudden change of symptoms, without presenting characters of adynamia. This, however, sometimes happens; and it does not appear that the fever, in this case, is either epidemic or contagious. This form of pernicious fever is commonly known under the name of *malignant fever*; a bad denomination, for which Dr. Pinel has substituted, in his *Nosographia*, the more proper one of *ataxic fever*.

100. Pernicious fever, under certain circumstances, has a progress exceedingly slow, among persons whose fibres are relaxed, and whose nerves are weak, or who are exhausted by any cause whatever. It appears to be produced sometimes by an epidemic atmosphere, and develops itself in a very obscure manner.

At the commencement of the disease, the organs of the senses are affected by the slightest causes; seem to become blunted towards the end, and are excited with difficulty.

The disease often remains in the same state for a very long time; and its salutary termination is effected slowly without a manifest crisis; or is followed by some critical phænomena, such as deafness, pustules, abscesses, miliary eruption, &c.

If the symptoms grow worse, the patient becomes

comes gradually exhausted, and dies in a state of slight delirium, or in convulsions. Sometimes a continual diarrhœa or excessive sweats come on, and he dies totally exhausted at the end of five, six, or even more weeks. *Slow nervous fever.*

101. The most common pernicious fever is that which breaks out in hospitals, prisons, &c. In general, it exhibits striking characters of adynamia and ataxia. It begins, for the most part, by a very intense bilious fever, which changes its character towards the fifth day. Sometimes it announces itself more slowly by the first symptoms of mucous fever: in some cases of very active epidemia, its attack is suddenly announced by those phænomena which form its essential characters.

In the hospitals of large cities, when poverty and disease bring thither a great number of patients, the wards soon become insufficient to contain them, and several of them are crowded together in the same bed. In such cases, this fever develops itself with great energy, and seems to assume a character of contagion, which gradually spreads to other wards set apart for the hurt and wounded: from the sick it is conveyed to the servants of the hospital; and from the hospital to the adjacent places, and sometimes even throughout the whole town.

The case is the same in the military hospitals,
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when crowded with sick and wounded, in consequence of an active and bloody campaign. *Jail fever.* *Typhus.*

102. Pernicious fever often assumes an endemic character in several districts of America and the West Indies exposed to excessive heat and frequent rains: under analogous circumstances of time and place, it becomes epidemic.

In places where it is endemic, it attacks chiefly those who have come from a temperate climate to these damp and scorching regions; those who expose themselves to the night-dews, after violent exercise during the day, under the ardent heat of the sun; those who indulge to excess in spiritous liquors and venereal pleasures, or who live in misery and wretchedness. It seldom attacks the rich, females and children, or those who do not much expose themselves to the heat of the sun. It scarcely ever attacks the natives, and it ceases during cold weather.

In certain places, such as Cadiz, it becomes epidemic during the great heats, or when a scarcity of water and provision prevails. It attacks those in preference who suffer most from these causes of disease.

Its attack is announced by some slight alternations of heat and cold, which are succeeded by pain in the head, anxiety, and vertigo. The sleep is interrupted;

interrupted; the eyes become inflamed and ardent; the face, neck, and breast are red; the skin is dry and scorching; the tongue is foul, and the patient experiences loathing, nausea, pains in the epigastrium, loins, and limbs. A tenesmus takes place; the urine is limpid or red; the pulse full and frequent, &c.

This state, which continues for some days, is for the most part followed by a sort of apparent calm: the heat of the skin ceases, the fever abates, and the pulse even becomes slower than usual; but a prostration of strength soon takes place, with drowsiness, delirium, sensation of internal heat, horripilations, violent ardor, intense fever, acute pain in the head and loins. The white of the eyes first becomes of a yellow colour, and then the circumference of the mouth and the temples. This colour afterwards extends to the neck, the breast, and the whole body. The patient experiences great oppression; the pulse is small and intermittent. The lips become swelled, the tongue is red and dry, accompanied with ardent thirst, nausea, bilious vomiting, shooting pains in the epigastrium. The belly is distended, and painful to the touch. A diarrhoea takes place, and the fæces and urine are saffron-coloured.

At this period, when the symptoms do not make new progress, the tongue becomes moist, the vomiting ceases, bilious stools take place; the urine

appears turbid; the patient is relieved by a general perspiration, and the health is gradually restored.

But if the disease makes new progress, extreme prostration of strength ensues, with watchfulness, delirium, agitation, subfultus tendinum. The pulse is intermittent, and exceedingly small. The skin, which is dry, is covered with petechiæ, vibices, or other exanthemata. The tongue then becomes arid, black, and full of cracks. The patient vomits up a black fetid matter; the stools and urine have the same character. Hæmorrhages take place from the nose, mouth, eyes, ears, and even from the pores of the skin. The sweats become cold; the difficulty of breathing is excessive; the limbs have no heat, and death ensues.

All these symptoms often proceed with such rapidity, that the patients are carried off in twenty-four hours, or in the course of a few days.

The body soon passes to a state of putrefaction; the skin appears covered with livid spots, especially towards the epigastrium, and the body seems as if all bruised. The blood often flows from different parts. The inside of the body very often retains a considerable degree of heat, for eight or ten hours.

The surface of all the abdominal viscera is of a yellowish colour, intermixed with large livid spots; the

the inside of them is of a dark red colour. The liver, more voluminous and livid, exhibits sometimes gangrenous spots, and blackish blood oozes from its interior parts. The bile contained in the gall bladder is thick, of a brown colour, and mixes with difficulty with water. Thick, black, and fetid urine is found in the bladder.

When the causes which produce this fever act with great intensity, they attack a numerous class of individuals, and the mortality becomes very great. This circumstance contributes, in an eminent degree, to aggravate the effects of the epidemia, as it spreads consternation and terror, and disposes a greater number of persons to receive the disease, by depriving them of the strength and energy necessary to resist it. *Yellow fever.*

103. The last form of pernicious fever, which we shall describe, breaks out most readily in warm damp countries, after long continued rains and excessive heats, in populous cities, among men condemned by their prejudices and ignorance to live in small damp and gloomy habitations, amidst wretchedness and dirt, and exposed to the emanations of putrid animal substances. It develops itself after a famine, during the calamities of war, in besieged cities, in crowded hospitals, prisons, &c. In the latter cases, the chagrin, consternation, discouragement and despair, to which these scourges
 8 give

give rise, tend perhaps more than the physical alterations they produce, to favour the attack of the disease. It is the most destructive of all the maladies known, and hence it may be readily seen that it is the *plague*.

When it begins to manifest itself in places where it rarely appears, the physicians at first confound it with the preceding disease, because in that stage it has the same progress, and exhibits almost the same characters*. It appears to differ from the former only by the buboes which often take place in it, but which are never observed in the other, and by the greater rapidity and violence of the symptoms.

But when the plague has attained to its highest degree of exaltation, and produces the greatest ravage, it follows a progress peculiar to itself, and which renders it easy to be known.

Its attack is announced by pain and heaviness in the head, shivering, moderate heat in the skin, ardent heat in the interior part of the body. The words are uttered with precipitation, or the voice is altered; the face is red; the eyes are bright and sparkling. The patient seems as if intoxicated; appears sad and dejected; has an air of fear and timidity; falls asleep, and starts up in terror and despair.

* The plague of Marseilles, and that of Moscow, were at first considered by the physicians as a *malignant putrid fever*.

The pulse is irregular, respiration difficult, and a hæmorrhagy sometimes takes place from the nostrils and fauces.

The tongue, at first white or yellowish, then dry and red, becomes at last black and rough. The patient has an excessive thirst, accompanied with a slight degree of fever; experiences a heat at the stomach; nausea, bilious or bloody vomiting; flux of the same nature; and the urine is red or lemon-coloured.

These symptoms increase during the first days, and are often followed by *buboes** in the groin, arm-pits, and parotid glands.

The extreme prostration of strength and weakness which then take place, no longer permit the

* Buboes are abscesses which generally take place in the groin, rarely in the arm-pits, and still more rarely towards the angle of the jaws. They appear from the attack of the disease, or on the second or third day. They always place themselves around the glands, and not on their substance. One never appears in the groin and another in the arm-pit at the same time; but, in general, in similar parts, one on each side. Sometimes the bubo of the groin shows itself towards the upper part of the thigh, and that of the arm-pit towards the sternum.

A bubo manifests itself by a tumour at first scarcely sensible, with profound pain: this tumour gradually increases, and follows the usual progress of the abscesses of that part, when the patient does not move during the first days after the appearance of the disease; and hence it has been said that it is a good sign when it comes to suppuration.

When a bubo takes place on each side of the neck, they sometimes increase to such a size as to bring on death by suffocation.

patient

patient to sit upright, and shew themselves by tremor of the hands and feet. The eyes are red, projecting and watery. The patient has a fixed or wild look. A continual vomiting or diarrhœa, without a very fetid odour, takes place, accompanied with a great difficulty of breathing; *carbuncles** or *petechiæ*† appear on different parts of the body.

* Carbuncles take place in every part of the body, except those covered with hair, and on buboes. They shew themselves chiefly in the fleshy parts, and are announced in the part where they are about to appear by a superficial and pungent pain.

A carbuncle begins by a very small pimple, which rises into a pustule, with redness at the base, and a white speck at the summit. This pustule speedily becomes broader, and assumes very little elevation. When it is about four or five lines in breadth, the pellicle by which it is covered bursts; a little yellow serous matter exudes from it, and the bottom, already of a deep black colour, exhibits the character of carbuncle. This ulceration continues to become broader, and sometimes acquires a considerable extent, with hardness around it.

Most carbuncles produce a profound disorganization, and the blackish scar which they form speedily detaches itself, and sometimes leaves the vessels, the nerves, and even the bones, uncovered.

† Petechiæ are spots nearly similar to flea-bites: they take place in every part of the body, but chiefly on the anterior part of the trunk, and on the limbs: the patient before their eruption experiences a sensation of smarting in the skin; at first they are generally of a dark purple colour, and then black, without redness or elevation. Sometimes three or four seem to unite to form a pustule, which produces a carbuncle: in this case a shooting pain is experienced in the part where it is about to appear.

The patient, free from any bad odour, exhibits at first nothing disgusting; but after some days, especially during sweats, he emits a sweetish disagreeable smell, which adheres to every thing he has used, even to the apartment, and which cannot be removed but by washing, or long exposure to the air.

If the disease continues to the seventh day, great hope may be entertained of a favourable termination, especially when the buboes swell, come to maturity, and suppurate. The other symptoms gradually abate, and a cure is speedily effected. But if the buboes, after being well developed, suddenly decrease or sink down, death is almost inevitable.

Sometimes a state of tranquillity and weakness take place; these symptoms announce speedy death. Very often there prevails throughout the whole course of the disease a sort of torpor, which terminates in a tranquil kind of death. At other times the patient seems to be in perfect health; asks for food and drink, and suddenly drops down dead.

But when the fever makes a rapid progress, when the epidemic is violent, and the mortality very great, the inhabitants, despairing of being able to escape the contagion, are struck with dread and consternation, and expire without seeming to have experienced the severe symptoms of the disease.

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This mode of infection is perfectly analogous to that of the asphyxia of those who cleanse sewers.

The diseased in this case exhibit a pale, wan visage, greatly altered; their aspect indicates terror and despair. Their looks are wild and horrid, like those of persons who labour under hydrophobia. They experience insupportable anxiety and frequent syncope; they remain motionless, stammer, and can scarcely speak; their voice becomes weak and extinct, and death often ensues in the course of two or three days, sometimes in twenty-four hours. Some even die suddenly in a few hours, after slight symptoms of fainting and convulsions.

The blood drawn in this disease appears to be nearly in its natural state.

The body when opened after death exhibits nothing particular. The limbs retain a great degree of flexibility; the flesh is flabby and œdematous, and the skin sometimes covered with vibices*.

Cold generally puts an end to, or greatly checks, the progress of this epidemia.

Strong robust persons are attacked with more difficulty, and suffer more severely. Those of a weak, delicate constitution, women and children, are sooner affected, and withstand it better.

* Vibices are blueish or livid stripes on the skin; they appear only a little time before death, and often after it.

Excess of every kind disposes the body for the reception of the disease; and in the height of the epidemia, fear and terror contribute to the destruction of a great many individuals.

It appears that persons who have been once attacked by the plague seldom contract the disease again during the course of the same epidemia*.

104. Physicians who have seen the effects of the plague, and who have written on that disease, have observed that it is communicated by the neighbourhood of infected persons; that it is more certainly contracted the nearer they are, and that it is possible to avoid it by removing to a distance from them. The greater number have thence concluded that it is essentially communicated by contact. Several of them, however, have observed that contact is not always necessary to communicate the infection; and Guy de Chauliac relates, that the plague of Avignon, in the thirteenth century, was so contagious, that the disease was caught merely by looking at those attacked by it.

* Samoëlowits relates that eighty persons who had contracted the plague at Moscow, in the month of July, attended in the following month the patients ill of the plague in one of the hospitals, where a thousand died every day, without any of them being again attacked. This physician, however, was attacked three times, but in a slight manner: he had swellings in the arm-pits, but they did not produce complete buboes.

It

It is not probable that the plague is propagated, at least in the greater number of cases, by the contact of the infected, or of articles which they have used; but there is reason to think that the emanations proceeding from them communicate the disease by being introduced into the lungs of those in the neighbourhood.

It is well known that the epidermis cannot be easily penetrated by foreign substances, and we are acquainted with none which can traverse it in this manner, without any effort, to convey disorder and derangement to the whole organization. The poison of canine madness, and that of the viper, the individual effects of which are at least as terrible as those of the plague, exercise no action unless introduced beneath the epidermis, or applied to some part deprived of it.

On the other hand, the nerves in the nostrils, the bronchiæ, the lungs and the mouth, which are not defended by a dry, and as we may say inorganic epidermis, can easily receive the impression of deleterious miasmata, deposited there by the air which has been inspired. The asphyxiæ produced by some gaseous substances, those which sometimes attack night-men and ditchers, when they inspire air charged with emanations from animal substances in a certain state of putrefaction, exhibit cases of disease the progress of which is still speedier than that of the plague.

It

It is probable that the miasmata proceeding from the bodies of persons attacked by the plague do not adhere closely to the articles which have been used by them; that they readily disengage themselves by mere exposure to the air; and that, when diffused in the atmosphere, they soon lose their fatal property. If these miasmata adhered to all bodies, and maintained themselves in a fixed state, there can be no doubt that in a country once infected by the objects used by the diseased, like Moscow and its environs, where this contagion in less than a year swept off more than 133,341 individuals, such a large quantity of them would be formed that they would be frequently communicated and re-appear, at least for several years. The measles, which are perpetuated in this manner, would be a scourge more terrible than the plague, if they could attack the same individual several times.

The circumstances favourable to the production of the plague depend on the constitution of the atmosphere, on certain localities, and on the disposition of the individuals.

The atmosphere favourable to this disease seems to be that produced by hot moist air, which lessens the strength and energy of those who live in it.

The local circumstances are: a district sheltered from winds, subject to inundation by long continued rain, marshy, and where by the sudden

draining or evaporation of its waters a large muddy and fetid surface is left in a state of exhalation. These circumstances comprehend also the disengagement of effluvia from vegetable and animal matters in a state of putrefaction; the different sources of insalubrity arising from ill-built cities, &c.

The disposition of the individuals depends always on a physical state of debility or mental depression, which prevents them from resisting the causes of infection. This state is produced by a concurrence of circumstances exceedingly various, such as low, damp, and infectious habitations; food destitute of nourishment, or of a bad quality; dirtiness in regard to dress; the calamities which are the consequences of famine or war.

The progress of the plague abates when the cold weather begins, but very often after it has swept off one half of the inhabitants.

In countries where this disease frequently makes its appearance it is never so destructive. The inhabitants seem to be accustomed to inspire deleterious emanations, and are much less affected by them. Besides, when the plague breaks out among them, its ravages are not increased by fear and despair: the ignorance and superstition of the inhabitants make them wait with resignation for that death which they imagine to be destined for them by the will of heaven.

It

It is among such people that the plague ought to be permanent, and to spread daily with a rapid progress, if pestilential miasmata could remain attached to clothes or other articles, and thus communicate the disease; for they never take much care to purify the clothes of the infected, or to burn those articles which they used during the prevalence of the malady. After the plague has ceased, they remain in the same places; sleep on the same carpets; wear the same dresses: and yet the disease stops, and often does not re-appear for ten years.

From these considerations several important truths may be naturally deduced.

It is evident that the plague is nothing but continued pernicious fever carried to the highest degree of exacerbation. It develops itself spontaneously by a concurrence of the atmospheric, local, and individual circumstances already mentioned. Those affected by it fall suddenly into a state of extreme weakness, and their bodies soon exhibit a manifest alteration. The miasmata which are then disengaged from these bodies struggling against a speedy decomposition, soon become the powerful means of propagating the disease. These miasmata, indeed, when received into the ærian passages, give rise, by the impression they make on the nerves of these parts, to a development of the

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phænomena

phænomena of the plague, as certain gaseous substances give rise to those of asphyxia.

When continued pernicious fevers appear in very great number, they do not fail soon to assume a manifest character of exacerbation. There is then reason to apprehend that the general causes of their spontaneous development will soon be accompanied with the action of miasmata disengaged at a certain degree of the disease, and that the fever, which as yet is merely epidemic, will become powerfully contagious by the inspiration of these miasmata.

The most certain method of checking this kind of contagion is, to place the sick in such a situation that the vapours which exhale from their bodies may be speedily diffused and carried off by the winds. Instead, therefore, of shutting up infected persons in their houses or in hospitals, and advising the inhabitants to quit the city, the sick ought rather to be conveyed speedily to the open country, and placed in tents, where the air may have a free circulation around them; and it is certain that, in such a case, the effects of the contagion must soon cease.

What has been here indicated, on a large scale, in regard to the plague, may be applied on a small one to the hospital fever, which exhibits the same mode of contagion. When it is very destructive

in an hospital, and threatens to spread infection throughout a whole town, as happens in many places during the time of war, the only method of speedily stopping the contagion, and putting an end to the mortality, would be to remove all those infected with pernicious fever, from the wards, into galleries exposed to the open air, or rather to tents erected in some neighbouring inclosure. The cold can be no valid objection to this mode of treatment; for one can hardly die of cold in a bed well covered even in the open air; and, on the other hand, those affected with hospital fever die speedily.

Nor can any objection arise from the supposed difficulty of paying proper attention to the sick, when so far removed from the edifice where every thing necessary is provided for them, as proper drink and furniture form the whole of what is absolutely required.

INTERMITTENT FEVERS.

105. HAVING given a history of those fevers the progress of which is continued, it now remains that I should speak of those the attacks of which return regularly at a fixed period, and which during *the intermission* leave the patient in a state of health more or less perfect. The striking character by which the latter are distinguished, requires that they should be formed into a distinct class, notwithstanding the great analogy they seem to have, in other respects, with the different types of continued fever, and which I shall not fail to remark.

106. The most common appears almost indifferently in the spring and autumn, sometimes in summer, and rarely in winter. It is generally preceded for some days by an indisposition more or less striking, general lassitude, pains in the limbs and loins, with a derangement of the gastric organ, pain in the head, slowness of the intellectual functions, &c.

The attack of the disease is marked by a coldness of the extremities, and sometimes by alternations of heat and cold. These symptoms are followed by anxiety, nausea, and a vomiting of green

or

or yellowish matter. The skin is dry, and rough to the touch; the pulse accelerated, small, and concentrated. The patient experiences great thirst; the mouth is dry, clammy, and bitter. The cold stage, which is sometimes very short, rarely continues longer than three quarters of an hour.

After irregular flushes of heat the whole body seems burning hot, and the skin becomes dry. The pulse increases, the face appears red and voluminous, and often exhibits greenish yellow streaks. The pain in the head is sometimes insupportable; the mouth is dry and bitter, the thirst unquenchable; with pain, or at least great sensibility, in the epigastrium. Respiration is high and accelerated; sometimes the vomiting continues. The urine, in general, is not very abundant: it is very red, and deposits a lateritious sediment.

At length the skin becomes moist; almost all the secretions, which had been greatly diminished, are re-established. Perspiration is universal and abundant; all the symptoms gradually abate; and after a pretty calm sleep the patient finds himself nearly in the same state as before the paroxysm.

The paroxysm recurs in the same manner, and nearly at the same hour, every third day, leaving a complete day without fever.

This kind of fever, in its general symptoms, shows a great resemblance to those called *bilious*.

Of all the intermittents it is that the symptoms of which are most violent, and which has the most rapid progress. It often terminates spontaneously after the seventh or the ninth paroxysm, especially in individuals of a sound constitution, and during the fine season of the year.

The treatment in general ought to be, to restore the particular derangements in the gastro-hepatic organs, and to strengthen the system during the days of intermission. *Tertian fever.*

107. A second sort of intermittent fever, much rarer than the preceding, generally makes its appearance in winter, or in a cold and cloudy autumn; among children, women, and old persons; individuals of a relaxed and feeble constitution; ill-fed and badly clothed; who reside in cold, damp, dirty, dark, and confined habitations; exhausted by fatigue, diseases, sorrow, &c.

It commonly makes its attack in the evening, at night, or in the morning, with a sensation of cold and shivering; sometimes with pain in the head, extreme debility, or even syncope; vomiting often takes place, and mucous stools. The pulse is weak and unequal, accompanied with a slight thirst. This first stage is in general much longer than in the tertian fever.

The heat after some slight and transient flushes increases slowly, and becomes universal, without ever being

being very violent. The face towards the cheek-bones exhibits large rose-coloured spots on a very pale ground. The patient experiences a dull pain in the head, with drowsiness more or less manifest; perceives a sweetish taste in the mouth, slightly bitter, and nauseous; feels a sensation of oppression, or even of pain, towards the epigastrium, with a twitching which seems to pull the stomach towards the back. The thirst is not ardent. At length, after some hours, the fit terminates by an universal and moderate sweat.

The urine, which is at first limpid, becomes dark, and deposits a lateritious sediment. The face remains pale or ash-coloured, with a general heaviness and inactivity of all the senses; the paroxysms are renewed every day, nearly at the same hour.

This kind of fever exhibits all the characters of continued mucous fevers; it proceeds with the same slow progress, and often continues for a long time. When it persists, it generally assumes the type of that which I am going to describe, and requires the same mode of treatment. *Quotidian fever.*

108. The third form of intermittent fever is distinguished by its return every four days. It is much less common than the tertian, but much more so than the quotidian. It generally attacks
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the same individuals at the same seasons and in the same places as the preceding. It is observed, however, more frequently in autumn, after a very warm summer, and especially in damp marshy places, or places surrounded by lakes and ponds, the muddy bottoms of which are too suddenly abandoned by the water.

It generally makes its attack in the afternoon about four or five o'clock. It announces itself by a very striking state of languor; dull, heavy pain in the head, back, and legs; coldness of the feet and hands; general paleness; livid colour of the face and nails. Soon after the patient experiences a sort of stiffness in the limbs, with an universal trembling; rapid agitation of the tongue and lips; chattering of the teeth; accelerated and interrupted respiration: the whole body is bent, and agitated with a rapid and fatiguing motion. This state of suffering is accompanied with a contraction towards the sternal appendix. The skin is often dry and rugous, though the patient experiences a sensation of great cold. Sometimes he is costive, at others has a continual desire to make water or go to stool. His ideas seem often confused; he talks incessantly, and his words are short, precipitate and interrupted. This first period may last two, four, and even six hours.

A general dry heat, rather disagreeable than ardent,

dént, comes on slowly and progressively. The pulse becomes irregular, more accelerated, and stronger. There is always a dull pain in the head, with vertigo. At length, after a longer or shorter period, the skin becomes moist, the heat and other symptoms gradually abate, and at last totally disappear. At other times the fits terminate by an abundant sweat of a long duration. The urine, which at first is aqueous, assumes a dark tint, and deposits a lateritious sediment.

During the two following days the patient, though free from fever, retains a sensation of pain in the limbs, and particularly in the legs and feet; experiences a heaviness in the head; has a dejected air; and when the disease is of long standing, the face is pale, and more or less puffed up.

Sometimes this fever succeeds certain eruptions; and at others its spontaneous cure is followed by the appearance of different exanthemata.

Every thing in the history of this disease indicates its relation with mucous affections: the time when it takes place; the circumstances by which it is produced; the particular disposition of the individuals whom it affects; the character of its symptoms, and their slow progress; the state of the patient during the intermissions; and the obstinacy of the disease, which often does not yield but to the influence of the spring, or even of the summer.

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In this, as in quotidian fevers, it is proper to give a stimulus to the gastric organs, and to fortify the whole system : emetics and slight purgatives, mucilaginous draughts, at first aromatic and then bitter, &c. may therefore be employed with success. In many cases the paroxysms ought to be prevented or checked, which is almost always in the physician's power by perturbing means : but returns after a longer or shorter period are still to be apprehended ; and when this happens several times, the best course is to leave the disease to itself till the next spring, when it will be easily cured. *Quartan fever.*

109. I have here exhibited the three principal types of intermitting fevers ; but there are a multitude of cases which deviate from them more or less. Thus, there is one remittent fever, the paroxysms of which return every day, resembling each other alternately one day in two, in regard to the total paroxysm, and every period of the same paroxysm in regard to the intensity and peculiar character of the symptoms. These symptoms retain also a great analogy to the bilious fevers, and evidently differ from those of the quotidian. *Double tertian.*

A *quadruple tertian* also is observed, which produces two paroxysms one day, and one paroxysm the following. There is also a *double* and *triple quartan*.

Intermittent

Intermittent fevers often exhibit great variety in the return of the paroxysms, and in the duration of the three periods of the paroxysm.

The paroxysms, for the most part, return at the same hour; sometimes they are regularly anticipated or retarded. At other times they are absolutely irregular and uncertain.

Sometimes the cold stage is long and violent; sometimes a rapid and transient shivering only is observed. The period of the hot stage, which in general is longer, is sometimes scarcely sensible, that of perspiration is often wanting entirely.

In certain cases it is difficult to ascertain whether a fever is intermittent or continued, because no complete intermission, but merely a sort of remission, with exacerbations determined more or less exactly by the three periods of the complete paroxysms, is observed. Some physicians are of opinion that there exists then, at the same time, an intermittent and a continued fever. But this hypothesis is founded merely on conjecture. Observation shows, that a fever evidently continued at its commencement assumes sometimes in a few days the intermittent type; and that at other times an intermittent changes into a continued, to become afterwards intermittent.

It is also sometimes very difficult to distinguish an intermittent from some catarrhal fevers, or slow fevers which depend on the slow progress of a phlegmasia

phlegmasia in some interior organ ; because these fevers, habitually slight, exhibit daily a striking increase of intensity.

Though intermittent fevers approach near to mucous or bilious fevers, according to the type which they affect, it is however certain that their peculiar character is singularly modified by the season, and the constitution of the individual.

Tertian fever belongs almost exclusively to the spring. It is however observed, that during this season all the intermittent fevers exhibit more acute symptoms and a more regular progress, and that they terminate spontaneously after a small number of paroxysms. I must however except cold damp springs, the almost autumnal constitution of which retards the change produced in the organization by the first heats of summer.

In autumn all these fevers have a slower progress, and approach more to mucous fevers. It is more peculiarly the season of quartan and quotidian fevers, though many tertians are observed also. At this period all these fevers are liable to persist with obstinacy ; and when they continue to the winter they never yield but to the revolution of the spring.

Intermittent fevers are observed in all places and at all seasons ; but they prevail chiefly in spring, and particularly in autumn. They appear more readily after violent and long-continued heats, which

which have enervated the gastric system, and increased its sensibility in a singular manner. They are epidemic in low, damp, and marshy districts, especially when muddy bottoms are abruptly abandoned by the waters.

The treatment of intermittent fevers must be regulated by their type; the constitution of the individual; the season; the nature of the prevailing diseases, &c. In spring they almost always terminate speedily of themselves, and it is scarcely necessary to employ a few slight bitters. But in autumn, and particularly in regard to quartan and quotidian fevers, it is necessary after the first five or seven paroxysms to prevent the return of them, if possible.

Every intermittent fever, in consequence of its intermitting, is subordinate to the power of art; each paroxysm is really an acute, rapid, and short fever, the development of which may be prevented at pleasure. Cinchona well administered is one of the most infallible means; its action is the surest, the most durable, and the easiest to be managed. There are a multitude of other means really febrifuge; such as emetics, sudorifics, narcotics, a smart commotion, great exertion of mind, and in general all stimulants, employed in such a manner that their action shall develop or maintain itself at the moment of the febrile attack. In this manner

manner episcarpia or amulets, and a multitude of other ridiculous processes, perfectly useless in themselves, but which have often been rendered effectual by the powers of the imagination, may be conceived to exercise an action.

110. Intermittent, like continued fevers, are never essentially fatal in their state of simplicity; but, like the latter, they exhibit a form highly *pernicious*, which for the most part is epidemic.

Tertian and quartan fever, but the latter more rarely, exhibit sometimes *accessory symptoms* of disease which develop themselves, increase, and abate, following the course of each paroxysm, and disappear along with them. These symptoms, in such a case, deserve very little attention; but in the *pernicious* form they rapidly acquire such a degree of exacerbation, that they constitute the *essential symptoms*, and may occasion speedy death.

It is evident that the number of these symptoms may be indefinite. Those found by observation to be the most frequent, and the most fatal, are the following :

1st. Violent and immoderate evacuation, upwards and downwards, of bilious, green, and exceedingly varied matters, sometimes highly irritating in their passage.

2d. Serous and bloody stools, like the washings
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of flesh, no way painful, and at first giving little uneasiness, but soon becoming exceedingly copious and frequent.

3d. A sensation most dreadfully painful and lacerating in the orifice of the œsophagus, accompanied in general with frequent fits of fainting.

4th. A sweat, at first slight towards the second period, which increases with the fever, and soon becomes diffuent and cold. Sometimes this fatal sweat does not begin till towards the decline of the paroxysm; and for that reason is more insidious.

5th. Languor, a prostration of strength, fainting on the slightest motion, even of the arm or the hand, &c.

6th. Icy coldness at the commencement of the paroxysm, which continues for several hours, without the pulse rising, and without the heat becoming sensible to the touch.

7th. A severe comatose affection, or profound lethargy, which develops itself at different periods of the paroxysm; which increases and declines with it, leaving for the most part, at least to a certain degree, drowsiness during the intermission.

To these different symptoms, which Torti has exhibited to us in particular histories, exceedingly curious, may be added very acute rheumatic pain, pleuritic pain, convulsions, cephalalgia, spitting or vomiting of blood, &c. &c.

In the course of one paroxysm, one of the symptoms first appears in such a degree that it is impossible to determine whether it will become pernicious. During the intermission the tongue remains rough and dry, with extraordinary agitation and uneasiness, but without very striking fever or pain; a general indisposition, which occasions frequent sighing; repeated nausea, stools entirely bilious, great drowsiness, &c. In this case the return and exacerbation of the suspected symptom is to be apprehended for the next paroxysm. The pulse also is constantly depressed during the paroxysms, and even during the intermission.

In one of the following paroxysms, sometimes at the second, but for the most part at the third, the essential symptom takes place with the highest degree of violence: the strength suddenly decreases, the pulse is small, weak, concentrated, and sometimes almost insensible; the whole body becomes cold and livid; the visage shrinks, is decomposed, and exhibits all the characters of the hippocratic face; and if the patient escapes the present paroxysm, he will infallibly die at the next, unless its development be speedily prevented.

When the intermission is complete and sufficiently long; when each paroxysm exhibits three very distinct periods, and when the prevailing symptom follows exactly all its changes, the disease may be easily

easily distinguished, and its progress may be checked. But in all the contrary cases it is very difficult to avoid error, whether the interval be filled up by indisposition or by febrile state, the result of the fatigue occasioned by the preceding paroxysm; whether the paroxysm prolonged is only approaching towards its end when the following one begins to come on; or whether the paroxysms, well separated, or taking place the one before the other is ended, follow no regular progress. In this case, all the sagacity of the enlightened practitioner is required to guard against being surpris'd, and to enable him to take advantage of the slightest indications. He must know how to catch the sudden development of a violent symptom, which after some hours spontaneously abates, and then reappears at a determinate day and hour. He must observe the simple remittent or pernicious fevers which prevail at the same time; pay attention to the lateritious sediment of the urine, &c.

In the last place, if the fever has become almost continued, it will be still more difficult to foresee the moment of remission, which however is the only one when the victorious means can be applied. In this case it will be necessary to attend to a mere refrigeration of some part; to the paleness of the face; the unexpected development of a

cough; to the state of the pulse, which becomes small, frequent, and concentrated; to yawning; to the renewal of a symptom which has appeared at the commencement of the preceding paroxysms.

Pernicious fevers are frequently observed in warm, low, damp countries, surrounded by marshes, lakes, or ponds, the muddy bottoms of which contain a great quantity of animal and vegetable substances, long macerated under the water, and exceedingly putrescible, especially when these substances are suddenly exposed to the contact of the air by the retiring or evaporation of the waters. They are found more particularly in places directly exposed to winds charged with these putrid emanations, and particularly when there exists a great contrast between the burning heat of the day, and the damp penetrating cold of the evening and night, or when abundant rains suddenly moisten the mud dried by great heats. But it is only in the case of an almost complete union of these conditions that pernicious intermittent fevers become really epidemic.

Pernicious intermitting fevers, therefore, like *continued fevers* which exhibit that character, seem evidently to be produced by the contact of particular miasmata. The former are developed most frequently amidst marshy exhalations, and the latter

latter in the neighbourhood of the emanations of animal substances in a state of putrefaction.

These miasmata have a much more striking influence on strangers than on those enured to the climate by long habit; and they exercise a more powerful action on persons debilitated by excessive fatigue, poverty, anterior diseases, melancholy moral affections, &c.

HÆMORRHAGIÆ.

III. IN the history of Phlegmasiæ, and especially in that of Fevers, we have frequently met with different kinds of hæmorrhagy. These bloody evacuations were almost always accessory symptoms, for the most part critical, and were of no importance to be observed but as prognostics. But it happens that hæmorrhagies are repeated without any other affection at first very apparent, and in this case they depend on an essential derangement in the nervous action of the vascular system. Under such circumstances they are susceptible of acquiring a sort of periodicity, and become an obstinate disease by their long standing, and sometimes very dangerous by the excess of the evacuation.

Hæmorrhagy of the nose is in some measure peculiar to infancy and youth; ages at which every thing shows, that if there be a special direction of the vital motions, especially in the vascular system, this direction is towards the head.

It appears most commonly among individuals who lead an indolent life, and who use excess of nourishment. It is often produced by overstrained exertion of body or mind, by the use of aromatic or alcoholic stimulants, &c.

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In almost all cases it announces itself by some of the following peculiar symptoms : throbbing pains in the head, flushes of heat in the face, redness of the visage, sparkling eyes, optical illusions which make objects appear brilliant or red, involuntary discharge of tears, painful tension in the neck, ringing in the ears, deafness, accelerated beating of the carotid and temporal arteries, swelling of the veins of the head, confined respiration, with tension or intumescence of the epigastric region, dreams in which the sight of blood occurs.

Soon after a heavy pain takes place towards the forehead and the root of the nose, with an itching of the nostrils, and the blood at length flows in greater or less abundance.

Before and during the hæmorrhagy there is almost always observed a certain contraction of the skin, especially in the lower members, with a shrinking of the cutaneous veins ; shivering ; constipation more or less obstinate ; the pulse full, hard, and rebounding.

In certain cases of the disease we have seen some drops fall from the nose on the first or fourth day, which announce a nasal hæmorrhagy for the third day after, and at length a favourable termination, when the disease exhibits, in other respects, a regular progress. On this subject we shall refer to the valuable results of observation collected in the aphoristic works of Hippocrates.

In all cases hæmorrhagy is advantageous when its progress is moderate; but sometimes it is excessive, or frequently recurs, and may become troublesome if not checked by acidulous stimulants applied in the nostrils. In some cases the hæmorrhagy being very abundant is difficult to be checked; the blood flows through the nostrils, and into the back part of the mouth, and the patient may expire if the whole extent of the nasal fossæ be not speedily stuffed with lint. To render this method infallible, a double thread must be made to pass through the nostrils by a strong nasal inspiration; it is then to be drawn through the mouth; and a pledget of lint being made fast to it, the thread must be drawn back through the nose till the pledget be fixed at the entrance of the posterior part of the nostrils: the nasal fossæ are then to be entirely filled with lint, and the whole must be fastened by means of a knot made at the entrance of the nose. If the blood flows from both nostrils, the same process must be employed for both.

112. At adult age hæmorrhagies of the nose generally cease of themselves, and are often succeeded by those of the lungs: the latter come on, for the most part, between the age of twenty and thirty-five, in individuals who have a vicious conformation of the breast, a narrow chest, projecting shoulders,

shoulders, a long slender neck, the whole body thin and delicate; in those who possess great sensibility, who are highly irritable, and of a lively disposition; also among those who have been subject to any hæmorrhagy which has been suppressed.

Hæmorrhagy of the lungs takes place, for the most part, in the spring or the beginning of summer. It is sometimes produced by violent respiration or any other effort; but, in general, it is the result of a particular mode of irritation fixed on the pulmonary organs.

113. It announces itself, in common, by a sensation of heaviness and uneasiness in the breast, confined respiration, a pain in some parts of the thorax, a sensation of heat behind the sternum. There are often observed also, at the same time, coldness of the limbs, shivering, shrinking of the veins of the hands, rumbling noise of the intestines, and almost always a certain degree of constipation.

The patient experiences in the larynx and along the bronchiæ a sensation of tickling or itching, which provokes efforts to cough, and a little spumous blood of a bright red colour is then thrown up. The irritation continues, and new efforts produce a greater quantity of blood, which issues with a noise similar to that of air when it traverses a liquid. The blood is often expectorated as if by

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an undulatory motion, with the assistance of a very slight cough.

The blood first begins to appear in small quantity, and soon stops; but when the hæmorrhagy has been often repeated the blood issues in greater abundance, and continues to return for several days in succession.

In some cases the quantity is excessive, but rarely sufficient to occasion sudden death.

This hæmorrhagy, *cæteris paribus*, is less dangerous when produced by external violence, a suppression of the menses, &c. than when it arises from a peculiar and as it were constitutional disposition.

In all cases it is exceedingly troublesome when it frequently recurs; so that it contracts a sort of habit, and is accompanied and followed by cough, difficulty of breathing, and various other affections of the lungs. It almost always gives rise to a chronic phlegmasia, which terminates more or less rapidly in pulmonary phthisis. *Hæmoptysis*.

114. After the age of thirty-five, and between that period and forty, the hæmorrhagic direction abandons the head and breast, and passes from the arteries to the veins. The blood then in general flows from the hæmorrhoidal veins. This kind of bloody flux is observed chiefly in plethoric, sedentary individuals, accustomed to nourishment too succulent, and particularly among those descended

scended from parents subject to the same affection.

This affection, for the most part, is preceded by a general indisposition, or by a variety of disorders in different parts of the body.

The patient experiences within or around the anus a very disagreeable and often very painful sensation of fullness, heat, and itching; for the most part a sort of constipation, with a frequent desire to go to stool, and pains often very acute occasioned by the passage of the hardened fæces. Sometimes a discharge of mucous matter takes place; the discharge of blood which then follows is preceded, in some cases, by a certain febrile state.

This discharge exhibits great variety in regard to its quantity and duration. Sometimes nothing comes off but whitish mucous matter, and a few drops of blood which exude during the efforts made at stool. At other times the blood flows at intervals, and in great abundance: this case, however, never occurs during the first appearance of the hæmorrhoidal flux. In some cases the discharge of blood is so abundant and rapid that the strength decreases, and there ensues a speedy wasting, with swelling of the feet, puffed up appearance of the face, pale leaden colour, confined respiration, dropsy, &c.

Before the discharge of blood manifests itself, there are always formed within or around the

anus

anus small knotty tumours, which have been supposed to be formed by the dilatation of the veins, but which seem to be produced by an effusion of blood into the cellular tissue. When recent they contain blood pretty pure, and are soft to the touch. In the course of time they become firm, and exhibit a sort of scirrhus induration. These tumours are often very painful; sometimes they occasion a phlegmon, the suppuration of which gives rise to a fistulous ulcer, with permanent induration. At other times these indolent tumours, which arise in great numbers and of a large size, have a narrow pedicle, so that they can be removed by resection.

Hæmorrhoidal flux depends, for the most part, on other causes than a superabundant quantity of blood. The first attacks often arise from habitual constipation, and from all causes which create a mechanical obstacle to the progression of the blood in the whole system of the sub-hepatic vein (*vena portæ*): such as voluminous and hardened fæces too long retained; constriction of the interior membrane of the rectum inverted or prolapsed; development of the uterus in pregnancy. In common, there exists also an organic alteration; an habitual swelling in some of the viscera comprehended in the hepatic venous system. *Hæmorrhoids.*

115. Vomiting of blood is, for the most part,
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the consequence of violent efforts to vomit ; of a violent contusion in the epigastrium, or of some wound which affects the stomach. When it takes place spontaneously, it is almost always in the case of a suppression or derangement of the menstrual or hæmorrhoidal flux. It rarely appears in acute diseases, without the concurrence of one or the other of these affections.

Before it comes on, the person always experiences a sensation of heaviness and uneasiness towards the stomach ; with shivering and a sort of constriction in different parts of the body. The pains in the epigastrium often proceed to such a length as to threaten a speedy syncope. The pulse is small, hard, and very much concentrated. Nausea takes place, and is followed by a vomiting of blood, sometimes red and almost pure, sometimes brownish, partly coagulated in general, but never spumous and florid.

Sometimes the blood is mixed with matters which evidently come from the stomach. The pains cease with the vomiting, and are often renewed with it the same day, and sometimes the following days.

In general, a certain quantity of blood passes into the intestines ; and the stools which take place for several days exhibit a black tint more or less striking.

These hæmorrhagies are never dangerous ; yet,
when

when they frequently recur at the periods of menstruation, they acquire a power of habit which it is difficult to overcome. *Hæmatemesis*.

116. There is still another sort of bloody vomiting, which belongs more particularly to old age. It takes place, for the most part, in individuals who lead a sedentary life; worn out with poignant sorrow long continued, and in whom every thing announces a chronic affection of the abdominal viscera. In this case the matters thrown up by vomiting appear to have remained a long time in the stomach or in the intestines; they are brown or blackish and pitchy, and evidently contain coagulated blood. These vomitings, which are always preceded by fits of fainting, are in general repeated several times. The stools, highly fetid, are also black and pitchy, and are almost always preceded by fainting. The patient often falls, in a moment, into a state of extreme weakness, or into a sort of insensibility.

In this affection there is found, for the most part, a scirrhus swelling of the pylorus or the sides of the stomach, a chronic affection sometimes of the liver, the spleen, the mesentery, &c.; and in this case there no doubt existed an obstruction in some points of the system of the sub-hepatic vein.

This disease is always exceedingly alarming;

it is also very difficult to distinguish those cases where evacuation may be of advantage, from those where it may become fatal.

The means which seem to have been attended with any success are those which tend to expel from the intestines the half-putrid blood they contain, by giving a stimulus to their weakened action; and those which are calculated to support the strength in general. *Morbus niger, (Melena.)*

117. Voiding of blood by urine is, for the most part, the consequence of a calculous nephralgia, a violent contusion on the lumbar region, in the flank, on the hypogastric region, and particularly in the perinæum. Sometimes it seems to supply the place of menstrual flux. In some cases it takes place after violent exercise on horseback, or the use of certain acrid substances. Sometimes it occurs like passive hæmorrhagy in pernicious fevers and scurvy.

Hæmorrhagy exhibits also in its progress numerous varieties, according to the place from which it originates, and the causes which produce it. When its appearance has been preceded by calculous nephralgia, and when the blood issues of a black colour, in clots or filaments moulded in the urethra, there is reason to suppose that it comes from the reins. When preceded or accompanied by a sharp pain above the pubis, or towards
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the perinæum, and when it is red and fluid, there is reason to suspect that it comes from the bladder: it may however proceed from the bladder, and coagulate in its cavity. As the blood which has acquired a concrete form in the bladder cannot easily escape, it often produces in it most acute pains.

The presence of blood in the urine may be ascertained by its red or brownish colour, and by the deposit which the coagulum soon forms. This deposit, which at first is reddish, becomes sometimes gradually pale, and in a few days turns whitish. Very red urine, which does not contain blood, deposits a lateritious sediment.

Voiding of blood by urine is not of itself dangerous; it is fatal only when it becomes in some measure periodical. *Hæmaturia*.

118. *Irregularities in the menstrual flux* are connected, in a certain degree, with the history of hæmorrhagiæ; and though they belong more particularly to the functions of the system of generation, we shall here say a few words respecting them.

Excess of menstrual evacuation may arise from a local affection of the uterus; it takes place after parturition or abortion. During menstruation it may be produced by various accidents: such as a transport of passion, excess of venereal enjoyment, violent exercise, the abuse of stimulants, &c.

A deficiency of this habitual flux is oftener observed than an excessive abundance of it. Menstruation may decrease by the influence of long continued grief, and of all other causes which tend to produce a gradual debilitation of the constitution in general. In some cases a very violent commotion, the sudden impression of strong cold, &c. may suppress it entirely.

This diminution or total suppression is often accompanied with hæmorrhagies, sometimes excessive, which take place from different parts; and at the same time a great derangement is almost always observed in the exercise of the various functions.

Retardation of the first menstrual flux exhibits, in particular, a combination of very remarkable phenomena; such as general lassitude, oppression, pain in the head, universal paleness, sometimes œdematous swelling of the different parts, pains in the loins and towards the pelvis, &c.

The particular state of the individual, and the circumstances which have concurred towards the retardation or suppression of the menstrea, ought to serve as a guide in regard to the choice of the means best calculated to produce or re-establish the flux, and to show when it is proper to employ a stimulant at the habitual period, still indicated by efforts which fail to produce their effect: tonics,

and various corroborants, pediluvium, emollients applied to the genital parts, &c.

The cessation of the menstua at the natural period is, in general, attended with no danger among women who have lived in a manner agreeably to the wishes of nature; who have had children, or who have led a life of activity. But the case is different among those who have remained in a state of celibacy, and who have been brought up amidst idleness and opulence; among those who have made too free with spiritous liquors, and whose menstua have been habitually very abundant. Among such individuals very striking irregularities are observed in the periodical evacuation, which is excessive and of short duration, or continued for weeks and even for months; sometimes alternations of suppression and entire cessation take place; in certain cases chronic affections of different kinds come on; and even sometimes acute phlegmasiæ, active hæmorrhagies, apoplexy, &c. *Menorrhagia*.

119. Hæmorrhagies, in general, take place in robust sedentary individuals, who habitually use to excess nourishment too succulent; and particularly in those descended from parents subject to effusions of blood of some kind or other. They take place for the most part in spring, at the commencement

mencement of summer, when the energy of the vital functions acquires a great increase.

They are almost always preceded by a series of phænomena, which evidently announce a derangement in different parts of the system, and peculiar symptoms which indicate a special action of the organic forces towards the part where the blood is about to issue.

The part from which the hæmorrhagy is about to take place experiences an uneasy or painful sensation of tension and plenitude, with heat, itching, redness, and even swelling. There come on at the same time, in the distant parts, a peculiar state of constriction, shivering, or a very striking sensation of cold. At length the blood flows for a longer or shorter period, and spontaneously ceases; the general indisposition then abates; and the pulse, which was before frequent, full and hard, resumes its natural course.

These different phænomena are not observed in hæmorrhagies which result from a wound; but they precede those which appear in the course of fevers, or acute phlegmasiæ; they are observed also, in part, in those which have degenerated into habit, and even in the natural flux of menstruation.

In the first two periods of life hæmorrhagies are, for the most part, arterial; in the last two they are venous.

In children, till the age of puberty, the predo-

minance of the vital action flows itself towards the head ; this is the period of nasal hæmorrhagies, which generally decrease and disappear of themselves towards the fifteenth or twentieth year.

After adolescence, and till the age of thirty-five and forty, hæmorrhagies commonly take place in the thorax. In this case they appear sometimes to be a consequence of the habit of nasal hæmorrhagies ; but, for the most part, they are produced by a state of chronic irritation in the breast.

In the third and fourth period of life the blood flows, in general, from some points in the system of the vena portæ ; for the most part from the hæmorrhoidal vessels ; less frequently from those of the bladder, and more rarely from those of the stomach. In the last place, in extreme old age, it flows sometimes from the encephalic vessels.

The quantity of blood which a person may lose, without danger, is sometimes very great, especially when it flows slowly. Under some circumstances the blood is renewed with wonderful facility ; and this faculty becomes one of the causes of the speedy renewal of the hæmorrhagy, which afterwards gradually acquires a sort of habit.

Many physicians, the followers of Stahl, too confident in the healing powers of nature, have supposed that every hæmorrhagy ought to be respected, favoured, even excited, and never checked unless it be excessive.

It is certain that a hæmorrhagy which appears with all the signs of a salutary motion in the course of an acute phlegmasia, or a continued fever, ought to be respected and even favoured; the too abrupt suppression of it might be followed by various disorders, sometimes exceedingly severe: there is no reason to apprehend that an hæmorrhagy of this kind will ever become habitual. But, in almost every other case, means should be used to moderate the force of a hæmorrhagy, and to prevent its return.

Hæmorrhagic habits may be prevented, in a particular manner, by proper regimen, sobriety, exercise, &c. An existing hæmorrhagy may be moderated by diet, rest, cold acidulous beverages; the application of cold to a part corresponding to that from which the blood flows; by all strong and sudden affections. A hæmorrhagy which seems to endanger the life is immediately stopped by a ligature, compression, acids, and even the cautery, according to the different cases.

120. In describing the acute phlegmasiæ and fevers, in particular, we have often mentioned *critical* symptoms, which occurred chiefly towards the end of these diseases: we shall now endeavour to account for these phænomena.

Critical symptoms are observed in diseases where there is a general derangement of the nervous ac-

tion, with derangements more or less striking in the different functions.

In acute diseases, the salutary or fatal termination takes place often at an indeterminate period, in a very slow manner, and as we may say without any sensible *crisis*. But very often it takes place at a fixed period : which has given rise to the observation of *critical days*, so called because they are commonly salutary or fatal to the patient, and enable the physician to form some *opinion* in regard to the disease.

There is observed also, at this period, in each system of the organs, a combination of peculiar phænomena, which precede the re-establishment of their habitual function, and are the indirect signs of the general state of convalescence, which begins to be effected. These phænomena are distinguished by the name of *crises*.

In all diseases characterized by a general derangement, each function is deranged in a manner peculiar to itself, and exhibits a series of particular phænomena : on the return of health each of these functions recovers its former state, and exhibits symptoms more or less remarkable. These symptoms, in general, are the more apparent, as the derangement of the function has been greater, and of longer continuance.

Thus, when the function of the kidneys is deranged, their secretion is diminished, increased or changed ;

changed; the urine is in small quantity, red and scorching, or limpid and very abundant. When general tranquillity is about to be re-established, the secretion of the kidneys tends to return to its former state; but it never does so without exhibiting a particular character. Thus, the urine before it recovers its usual state is sweet, turbid, nebulous, full of sediment; and as urine in this state immediately precedes the natural urine, it is called *critical*.

The case is the same with the cutaneous organ, the secretions of which may also be increased, diminished, or changed, in the course of an acute disease: the skin is then arid, burning hot and dry, or furnishes an abundant, clammy, cold sweat in large drops. When the habitual secretion is about to be re-established, there comes on a gentle and universal perspiration, which gives relief: it is called the *critical sweat*.

Similar phænomena are observed in the alvine secretions, those of the liver, &c.

Thus, each function deranged during the course of an acute disease returns to its first state, exhibiting peculiar *characters*, more or less striking, which are called *critical*.

All the organs and even the intellectual exhibit analogous phænomena. Thus, in continued pernicious fevers, the derangement of that function is announced by a slight delirium, an absolute loss of

intellect, or a violent transport; and the individual, before he recovers his usual strength of mind, often exhibits for some time a very peculiar air of intoxication and stupidity.

In persons subject to hæmorrhagies of the nose, to hæmorrhoids, and in cases of retarded menstruation, if an increased action takes place during the course of the disease, or a hæmorrhagic effort, manifested by the appearance of some drops of blood, a hæmorrhagy may be predicted, which commonly takes place on one of the critical days. At that period the symptoms of general affection, for the most part, cease: an excretion either habitual or become necessary must show itself in preference.

These reflections are sufficient to explain what is meant by a crisis in diseases, and to convey a proper idea of the *character of critical evacuations*.

121. After having taken a general view of all those diseases which are accompanied with a manifest alteration in the structure of the different organs, (*pneumasiæ*), and after having given a history of the various derangements which take place in the whole of the organization, (*fevers*); it remains that we should exhibit the different modes of affection which the organs are susceptible of in the exercise of their functions. These numerous affections, a great part of which are commonly distinguished

distinguished by the name of, *NERVOUS*, may be comprehended under four principal heads.

In one, the patients exhibit a state of drowsiness more or less striking. *Comatose affections.*

In the second, a greater or less weakness is observed in the exercise of some particular function.

Asthenic affections.

In the third, the organs deranged in their action perform their functions with trouble and disorder.

Convulsive affections.

The last comprehends the derangements exhibited by the intellectual organ in the discharge of its functions. *Vesanic affections.*

COMATOSE AFFECTIONS.

122. **T**HERE is a certain affection which consists in the sudden loss of sensation and motion. This affection for the most part is the symptom of some other disease; but in particular cases it appears to be an essential derangement.

It is observed most commonly among individuals whose nervous system is exceedingly weak and irritable.

The principal causes which seem to produce it, or the circumstances by which it is preceded, are: a sudden diminution of the afflux of blood towards the brain; a hæmorrhagy, often very slight but sudden, while the individual is in an upright posture; a considerable alvine evacuation; parturition; a sudden fright, certain odours, &c. In the last place, a local affection of the heart and of the large vessels.

The attack of this disease is sometimes sudden and violent; at other times slow and gradual: in the latter case it is generally announced by a sensation of languor and uneasiness towards the region of the heart, accompanied with, or immediately followed by, vertigo, dimness of sight, and a ringing in the ears. Soon after a weakness of the pulse and of respiration is observed: these functions become
insensible,

insensible, or entirely cease. At the same time the face grows pale, the eye-lids are relaxed; a coldness, more or less striking, takes place in the whole body, with a flexibility of the limbs, cold sweat on the forehead and other parts, weakness and sometimes complete interruption of the intellectual functions. At the end of a short period the paroxysm often ceases spontaneously, and almost always leaves a sensation of universal lassitude, and of anxiety towards the heart.

When the individual begins to recover, it is observed that the pulse is never re-established as long as the paleness and cold remain.

This affection, when it frequently occurs and is carried to a high degree of intensity, is always troublesome.

A horizontal position and the application of different stimulants are the means proper for shortening the duration of the paroxysm of this affection, which has been distinguished by the name of *syncope*.

123. When a weak individual, exhausted with fatigue, intoxicated, &c. abandons himself, through want of means or of courage, to that inactivity which is generally produced by long exposure to very cold air, he first experiences a sensation exceedingly disagreeable, and then a torpor and numbness, which begin at the extremities of the limbs,

limbs, and soon spread to all the organs subject to voluntary motion. A progressive diminution of movement and sensation soon comes on, with an inclination to sleep, which gradually increases, and at length becomes irresistible. Soon after, the motion of the thorax and the beating of the pulse cease, and all signs of life disappear.

Sometimes, life abandons only certain parts, which are always those most exposed to the air and furthest distant from the heart.

Such accidents are uncommon in our climates; they happen for the most part in the neighbourhood of the poles, and frequently occur in mountainous countries, where the continuance of the snow and ice perpetuates the severity of winter. In such cases, the mountaineers who inhabit the Alps adopt a practice which is founded on experience. They know that between real death and the loss of sensation and motion there is an interval, no doubt variable, during which it is still possible to recall all the signs of vitality, and life. They therefore strip the body quite naked, and rub it some time with snow; they afterwards immerse it in cold water, which they gradually warm so as to avoid any sudden transition, and to restore heat in a progressive and uniform manner to every part of the body.

The too sudden application of caloric would be fatal: in the same manner, the sudden transition
from

from a very high temperature to a degree of cold supportable under any other circumstance, has sometimes produced gangrene. *Action of cold.*

124. The function of the pulmonary organ may be interrupted, or the organ itself may be suddenly affected by different causes; and in either of these cases derangements exceedingly dangerous, and very often sudden death, may be the consequence. We shall here give the history of the different cases of these diseases.

125. In the punishment of the halter convulsive movements are observed, and soon after perfect immobility. The face swells and becomes livid; the eyes remain open, red and projecting; the tongue acquires a large volume, and partly issues from the mouth; foam sometimes appears on the lips*, the mouth is distorted, &c.

There are many instances of persons executed in this manner, who, though not cut down till a considerable period had elapsed, recovered the exercise of all their functions, either spontaneously or by the use of different stimulants†; but in

* This is not always, as Hippocrates supposed, a constant sign of death.

† All those restored to life after being hanged, declare, that as soon as the noose was drawn tight they were suddenly struck with stupor and perfect insensibility.

general suspension is followed by real death, either because it has continued too long, or because it has produced organic derangements too considerable.

On examining the bodies after death, the alterations in the face already mentioned are observed. It becomes pale and shrinks on opening the jugular veins; a spumous matter is found in the bronchiæ; sometimes the scrotum is echymose, and the penis in a state of erection. Dr. Harvey, who frequently opened the bodies of suspended criminals soon after their death, several times found the lungs much distended with blood, and the right auricle dilated to the size of the fist. But at the end of a day this dilatation disappeared, the blood having issued from it spontaneously. The body retains its heat for a considerable period; sometimes it is even increased during the first moments after death, and in general the blood remains fluid.

Sometimes the vessels are found ruptured, and extravasated blood is observed in the cranium; the larynx is crushed, its muscles or membranes are torn, and luxations of the first cervical vertebræ take place.

The death of hanged persons seems to be produced chiefly by obturation of the ærian passages, which prevents the introduction of air into the lungs. This principal cause is often combined with others: such as constriction of the jugular veins,

veins, and derangements, but these are more rare, which the weight of the body and the pulling of the executioner produce in the larynx and the cervical column*.

Strangulation, by means of a cord drawn tight around the neck, produces the same phænomena as suspension, a few accidents excepted, which, as already said, depend merely on the weight of the body.

126. Every obturation of the trachea produces very speedily apparent death, which may soon become real†; but for the most part the signs of life may be recalled merely by rendering the aërian passages again free. Sometimes the artificial introduction of air into the lungs is employed, and the application of different stimulants.

Insurmountable obstacles opposed to the motion of the thorax, a strong compression of that cavity

* See Morgagni de Sedibus et Causis Morborum, Epist. xxx.

† Drusus, the son of the emperor Claudius, was suffocated by a pear which stuck in his throat. We read in the Sepulcretum of a young man who died suddenly in consequence of a piece of meat sticking in the larynx. Anacreon it is said was suffocated by the stone of a grape. A child four or five years of age, whose glottis was found to be exactly closed by a bean, fell down dead without any cry or convulsive movement. (See Bibliothéque Brit. tom. xiii. p. 254.) In a word, children are sometimes reduced to a state of asphyxia in the cradle, by the application to the mouth and nostrils of the pillows, which they are not able to free themselves from.

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and of the abdomen, palsy of the muscles of the thorax, produced by solution of the spinal marrow, are also causes of asphyxia.

It is not uncommon after long and laborious parturition to see feeble children brought forth without any signs of life, probably because the action of the air is not then sufficiently strong to give motion to the pulmonary organs; and in many cases these children have been preserved by employing means capable of exciting or reviving respiration.

127. If an animal be placed under the receiver of an air pump, on the first strokes of the piston it appears uneasy; in proportion as the air is exhausted its uneasiness increases, and its respiration becomes short, difficult and accelerated. The size of the animal is often increased; sometimes it evacuates by the mouth and anus; it at length falls into convulsions, and all the external signs of life disappear.

If air be speedily admitted to the animal, it may be recalled to life; but, in general, it rarely lives long after it has been thrown into a complete state of asphyxia by this method. In this case, the aërian passages remain free; but there is not a sufficient quantity of air to maintain respiration. It does not, however, appear that the want of air is the only cause of asphyxia: the too sudden removal

removal of that uniform and constant pressure which the organs are accustomed to sustain, contributes towards it also in a very great degree. In a large receiver, the air of which is rarefied slowly, the animal will live under a pressure far below that which proves fatal to it when the air is suddenly rarefied*. But the want of air is always the cause of death at the end of a certain period.

128. When a man is completely immersed in water, his pulse becomes weak and accelerated; soon after he experiences confinement in the breast, anxiety, and great agitation; he makes several partial and successive expirations, then efforts to inspire, and in this case a certain quantity of water† is introduced into the bronchiæ, and sometimes into the stomach. At length the visage, and particularly the lips, acquire a blueish tint; the sphincters become relaxed; a complete loss of motion and sensation take place, and the pulse entirely ceases.

* By speedily exhausting the air, cats have been reduced to a state of asphyxia, when the mercury stood at twelve inches; whereas by making a vacuum slowly, and habituating them to that state by repeated trials, they may be made to live under a pressure of 7, 6, and even 5 inches.

† It may be known by its colour, when an animal has been immersed in coloured water: None is found in an animal if reduced to a state of asphyxia before it be immersed. *Goodwin.*

All these phænomena occur in the course of a few minutes. The body soon becomes cold if it remains in the water: yet death is still only apparent; and if the body be taken from the water, life returns, either spontaneously, or by artificial respiration and the use of proper stimulants. But, at the end of a certain period, which it is difficult to determine, life ceases entirely.

The small quantity of water introduced into the bronchiæ, and particularly the withdrawing of caloric by the water during cold seasons, contribute to render the asphyxia more complete and more dangerous.

On opening the body, a darker colour is observed at the surface of the brain, without any turgidity of the vessels or extravasated blood; the epiglottis is raised up, the glottis is open, and a small quantity of spumous liquid is found in the bronchiæ; the veins and pulmonary arteries are full of black blood, as well as the two auricles and the right ventricle; the left ventricle is only half filled with blood of the same colour: the blood, in general, is pretty liquid: and this perhaps may serve to explain why a reddish exudation is seen with bloody foam around the nose and mouth of persons who have been drowned.

When the body has remained several days under water, the belly is much distended, the thorax projects, and the lungs are so dilated that the

air

air escapes with impetuosity as soon as the breast is opened. These phænomena depend on the presence of the gases developed by the commencement of putrefaction.

The introduction of water into the stomach does not in any manner contribute to produce the asphyxia, and very little of it penetrates into the bronchiæ*. The asphyxia then is produced, as in the former case, by the suspension of respiration; and the animal immersed in water finds itself as in rarefied air, without any remarkable change in the atmospheric pressure.

All animals with lungs lose by submersion the external appearances of life; but they lose them at periods which vary for each order of animals, and which, in general, depend on the common frequency of their inspirations. All these animals also are reduced sooner or later to a state of asphyxia by submersion in a medium, whether liquid or æri-form, which does not contain a sufficient proportion of oxygen gas.

129. Oxygen gas properly diluted with azotic gas is the only kind proper for maintaining the respi-

* Goodwin asserts, that having introduced into the trachea of cats held in a vertical position, a quantity of water, double at least to that which enters their bronchiæ during submersion, the only result was a difficulty of respiration and a weakening of the pulse, both of which soon disappeared.

ration of animals with lungs: all the other kinds *suffer them to die, or destroy them.*

Pure oxygen gas exercises on the lungs too powerful an excitement; it exalts the nervous action, and wastes too speedily the strength.

An animal inclosed in a certain quantity of atmospheric air, which has no means of being renewed, at length loses all sensation and motion. It is then found that the greater part of the oxygen gas has been consumed, and that the portion which remains has become unfit for maintaining combustion. In this manner, a great number of persons, when shut up in a narrow confined place, where the air is not renewed, may be reduced to a state of asphyxia; but in this case there are many other causes which in general render such asphyxiæ speedier and more dangerous, as will be hereafter shown.

An animal can respire for a considerable time, though with difficulty, in azotic and hydrogen gas; but it at length is reduced to a state of asphyxia; so that azotic and hydrogen gas do not kill animals speedily, but suffer them to die slowly. The lungs receive them without appearing to be affected by their action; the play of respiration is not interrupted; and the animal dies only because the lungs remain too long without receiving oxygen gas, the influence of which is necessary for maintaining life.

An animal lives longer in these two gases than when subjected to suspension or strangulation, to submersion in water and under mercury, or to a vacuum; because in all these cases there is not only a privation of oxygen, but the play of the pulmonary organs is suddenly interrupted; whereas in azotic and hydrogen gas it continues to take place.

All the other known gases* produce on the nerves of the lungs an impression which is communicated to the brain, and occasions a general derangement. The animal experiences some convulsions, and speedily loses all the external signs of life.

The non-respirable gas, to the action of which a person is most liable to be exposed, is the carbonic acid gas; it kills animals very speedily, even when applied in a small quantity†.

This gas is that disengaged from beer-, cider-, and wine-casks, when these liquors are in a state of fermentation, from the furnaces in which lime-

* The known gases, the inspiration of which even in small quantity produces sudden asphyxia, are: carbonic acid gas, and the gaseous oxide of carbon; carbonated, sulphurated, or phosphorated hydrogen gas; oxygenated muriatic acid gas, nitrous gas, ammoniacal gas, &c.

† A Guinea-pig, exposed to a mixture of two-thirds carbonic acid gas, and one-third oxygen, was reduced to a state of asphyxia in one minute, that is, as speedily as it would have been by exposure to pure carbonic acid gas.

stone is calcined, and from those in which charcoal is burnt*.

This gas is much heavier than atmospheric air, and always remains at the lowest part of those places where it is disengaged; it is also very soluble in water, so that it may be easily got rid of by employing a current of air, which carries it away, or water, which absorbs it.

It frequently happens that persons are reduced to a state of asphyxia by being shut up in a close apartment, without a chimney, in which charcoal is burnt. The asphyxia, in this case, is produced by the disengagement of carbonic acid gas; and when the charcoal begins to burn with a light blue flame, there is then disengaged carbonated hydrogen gas, the fatal action of which seems to be stronger and speedier than that of the carbonic acid gas: the proportion of oxygen diminished by combustion contributes also to increase the accidents. Persons thrown into a state of asphyxia by carbonic acid gas, whatever may be the source from which it arises, experience first a violent pain in the head, a sensation of strong pressure on the

* It is carbonic acid gas of this kind which is found in the *Grotto del Cane*, near Naples, and in that of Pymont. That found in some deep vaults, and in the subterranean galleries of certain mines, is probably of the same nature. In the latter places hydrogen gas is sometimes found also.

temples, vertigo, and sometimes nausea. The difficulty of breathing afterwards increases; violent palpitation of the heart takes place, with a trembling of the limbs, confusion of sight, ringing in the ears, deafness, and at length syncope. The individuals then fall down, and are entirely immersed in the carbonic acid gas; a circumstance which greatly contributes to aggravate their state. In some cases the individuals slowly experience a sort of drowiness, which soon becomes mortal.

In all these cases, the animal heat continues for some time, and the limbs remain flexible; the eyes project; the visage is swelled and red; and the arterial blood retains its florid colour, at least when death has been occasioned by carbonated hydrogen gas.

130. These asphyxiæ naturally conduct us to that to which nightmen, and those who clean privies and common sewers, are exposed. The latter takes place at different periods of the labour, when certain ditches are cleaned, sometimes after the emptying of privies and sewers, and particularly when the workmen receive the emanations in their faces: very often when they attack the *thick matter*; and sometimes when they arrive at the *hard* or *solid matters*, on touching a certain determinate point, they are suddenly struck with asphyxia. Sometimes they are exposed to it during the whole

course of their labour. In général, however, when the pernicious matter has ceased to show its effects, the workmen imagine that nothing further is to be apprehended. A labourer who has been already attacked is exposed to more danger than another, and will infallibly be first struck if he resume his work before he be completely recovered. In a word, this malady is sometimes communicated to those who approach the mouth of a person in a state of asphyxia; but this communication takes place chiefly when there issues from the mouth a peculiar odour, which is constant and well-known. Sometimes the effects of this communication do not appear till the end of several days: at other times they are sudden.

Those who are employed in cleaning sewers, privies, &c. distinguish five forms of asphyxia:

1st. The labourer gently falls asleep, sometimes while at work; sometimes in the open air, and drops down without any convulsions. He then recovers, making long and strong inspirations, but without pain. He has no remembrance of what took place during the accident. This loss of memory is not observed in the following cases:

2d. The workman laughs, sings, or emits modulated sounds; speaks incoherently, talks a great deal, and falls into a state of asphyxia.

3d. The workman finds himself struck; retires, attempts to speak, is suddenly seized with
convulsive

convulsive motions; dances about as if frantic, and falls down without any appearance of life.

4th. Pain in the stomach and in the joints of the arms; sudden suffocation.

5th. Alternate and frequent elevation and depression of the abdomen, with convulsion of the jaw.

Sometimes the affection is slight; respiration is only confined, and is not restored till after violent and convulsive efforts.

It sometimes happens that in emptying the same privy or sewer, two workmen are attacked in a different manner, or that one only is affected in two ways successively. These varieties depend as much perhaps on the disposition of the individuals, as on the different natures of the miasmata. It however appears that these distinct kinds of miasmata are not observed but when the solid matters have been touched, and they seem to proceed, in a special manner, from some particular points.

In communicated asphyxia we have seen the most violent spasms, tetanic and even epileptic, and soon after all the signs of apparent death; loss of the senses, cessation of respiration and of the pulse, absolute insensibility, and speedy coldness of the limbs. When the signs of life re-appear, a return of the spasmodic symptoms is sometimes observed, and the cure is less speedy than in the case of primitive asphyxiæ*.

* C. Halle never saw but one case of communicated asphyxia.

The accessions vary a great deal in their duration, and continue sometimes an hour or an hour and a half. The fifth form, in general, is the longest. In all cases resuscitation is not to be expected until air begins to issue from the mouth and the anus, and the individuals to make strong inspirations. A gradual re-establishment of the functions of the senses is then observed, with a sensation of fatigue, a progressive diminution of the pains, sometimes a swelling of the abdomen, bloody foam at the mouth; and if a vomiting take place, the cure in general is speedily effected.

When a workman is thrown into a state of asphyxia, it is customary among those who clean privies, &c. to employ at first the usual stimulants; and when he recovers a little they make him swallow in succession several spoonfuls of olive oil, until the stomach begins to swell: they then give him a glass of brandy; after which vomiting and evacuation by stool come on, and complete the cure.

The nature of the miasmata which produce these accidents is entirely unknown. They announce themselves by no constant odour; and they neither extinguish a candle nor inflame when brought into contact with a burning body.

The asphyxiæ which are sometimes suddenly produced by dissecting certain dead bodies; the accidents which take place either on opening an-
tient

tient tombs, or in going down into them ; and those which happened to the workmen employed in cleaning the sewer of the Faubourg St. Antoine, and at the bottom of some wells, ought no doubt to be ascribed to similar causes; and sometimes also perhaps to the presence of non-respirable air.

131. All asphyxiæ resemble each other in their general characters. It is always on the organ of respiration that the different causes produce their first impression, either by suspending the introduction of atmospheric air into the bronchiæ, or by admitting a gas which cannot maintain life; or, in the last place, by conveying thither mephitic and poisonous air. It is also on the same organ, and on the brain, that the secondary impression exercises its action; whether the blood, deprived of the qualities which it ought to receive during the respiration of atmospheric air, becomes incapable of producing on that organ a constant excitement, necessary for the maintenance of life; or whether the stupefying action of the deleterious gas, exercised directly on the pulmonary nerves, and transmitted to the brain, suspends the action of that organ. The phenomena thence resulting always indicate a great derangement in the nervous functions: there are first observed spasms, convulsions, a diminution and soon an absolute loss of sensation and voluntary motion; the movement of the thorax

ceases, and the pulse is annihilated. In every thing else, except the heat, which is dissipated slowly, the individual exhibits the most perfect picture of death. The greater part of the surfaces assume a colour more or less livid; the face, tongue, lips, &c. assume very often an extraordinary size, in consequence of the accumulation of the blood, stopped towards the arterial extremities.

The suddenness of the asphyxia varies also in each particular case, according to the state of the individual; according as the lungs are empty or full of atmospheric air; and according as respiration is entirely intercepted, or as it can be performed at certain intervals, &c.

In every asphyxia death becomes inevitable when the functions of the heart and lungs are entirely interrupted, and these functions rarely return spontaneously. In general, the lapse of a few hours is sufficient to render all medical assistance useless. However, as we have instances of resuscitation after a longer period, it is proper that the means applied should be continued for a considerable time. Except a few particular means, indicated by complications, the same stimulants are proper in all cases.

In regard to persons who have died by asphyxia, whatever may have been the cause, it is observed, in general, that the body passes speedier to a state
of

of putrefaction; that the muscles are less excitable by the action of the scalp, and the nerves by that of the Galvanic fluid, according as death has been more painful and tedious.

On the other hand, when the asphyxia has been instantaneous and the death sudden, the body does not putrefy so soon; and the parts are more sensible to mechanical agents, and to the effects of Galvanism. It appears that the nervous fluid, which in the first case has been entirely wasted during the convulsions and long efforts of the vital re-action, has not time, in the second, to be consumed, as the action of life has been suddenly interrupted.

In the last place, the accumulation of the blood in the pulmonary vessels, in the left cavities of the heart, and in the large veins, appears to be more striking, as the asphyxia has been more sudden. (See *Xavier Bichat*.)

It is remarked also that the return to life, in cases of asphyxia, is the speedier, *cæteris paribus*, the more suddenly the disease has come on.

132. There is one affection which consists in a sudden privation of the functions of the senses and of voluntary motion, with a permanency in the attitude in which the person is, or which he has been made to assume.

This disease is very rare. We have only a small number

number of histories of it, the greater part of which have not yet been properly detailed.

Two instances are to be found in the *Ephemerides Curios. Nat.* The first produced by contradiction in a female child five years of age, of an obstinate disposition. The second, in a magistrate, incensed at having been insulted in the discharge of his duty. We are told by Tulpus of a young man, passionately in love, who was instantaneously reduced to this state, on having unexpectedly learned that opposition was made to his being married. Rondelet mentions a young woman, married against her will, who fell into this state through the effect of grief; and the paroxysms were always renewed when she thought of her husband; when she heard his name mentioned, or when she found herself unexpectedly near him. Fernet relates the case of a man of letters, who was attacked by this affection in the midst of his labours; and Henricus Ab Heers describes the singular attitude of a capuchin, whom he beheld with astonishment in a similar state.

In these different histories there is always observed a privation of the functions of the senses, and of voluntary motion; a permanency of the trunk and limbs in the attitude they had before the attack, with a susceptibility of assuming and retaining all those which may be given to them. Sometimes there is an almost absolute suspension
of

of respiration, and even of pulsation, which at other times are almost completely maintained. Sometimes also the patient, pale and cold, exhibits the appearance of a statue which walks when pushed, and which sometimes swallows when food is put into its mouth.

At the end of a period exceedingly variable, and which sometimes may be longer than a day, according to some observations, there comes on a gradual re-establishment of all the functions, often with yawning, borborygmus, profound sighs, a sensation of lassitude; and, in general, without any remembrance of what has passed.

The ecstatic raptures of those contemplative devotees, which, as we learn from history, occur in all religions, ought to be ascribed to the same malady. In the history of St. Theresa, in particular, written by herself, we may see the different degrees of mystic ecstasy which the character of this disease at length assumes: a suspension of respiration, of speech, and of the intellectual faculties; the eyes involuntarily shut, immobility of the limbs, body remaining in one posture half-bent forwards, and a complete appearance of death. The moral faculties however are exalted, and at the end of about half an hour motion returns, but accompanied with languor and fatigue.

A very great analogy is observed between the
raptures

raptures of St. Theresa and the pleasure enjoyed by two young women who remained a long time in a sort of ecstasy during an acute disease. In many cases of syncope, a similar rapture is experienced; as was the case with Montaigne, who remained some time without motion in consequence of a fall.

This disease seems to be produced, in general, by moral causes, which have a stronger and readier action on persons whose nervous system is highly irritable. It is produced by violent contradiction; by a high sense of indignation, sudden and invincible opposition to the gratification of strong desires; by a lively emotion which seizes on all the faculties; strong mental exertion; long habit of contemplation, with continued and repeated efforts of the imagination; by the transports of an ardent mind wholly occupied with mystic meditations. Forestus gives the history of many affections of this kind ascribed to cold; but, as he only tells us that the soldiers were found dead in the morning, we have reason to doubt that the malady began by their falling into an analogous state. It is however certain that very strong desire and continued study may bring on a state of absolute insensibility, approaching very near to this disease; and Rondelet discovered the fraud of a priest, who pretended to be seized with it, only by the care which he one day saw him take that he might not

hurt his head in falling. This singular state has been distinguished by the name of *Catalepsia*.

133. There is one disease with which some persons are suddenly struck, as if by lightning, so that they die after a few convulsions; but which in others is established slowly and by degrees. The latter, in such cases, experience a sort of inactivity and drowsiness, then a palsy at first partial and afterwards more general; the senses become torpid, the memory grows weak, and is lost: at length, after several variations in the number and severity of the symptoms, there comes on a sudden cessation of motion, of sensation, and of the intellectual functions.

This disease, under certain circumstances, is found to be almost epidemic; and in certain places* to be almost endemial. Medical writers have

* In the *Ephemerides Curios. Naturæ* an account is given of a somniferous constitution, which took place after the commencement of a moderately cold winter, with continual rain, violent south winds, and frequent storms. Houlier observed many cases of apoplexy during a cold atmospheric constitution with south winds. After a similar constitution, Forestier saw a great many persons fall a sacrifice to apoplexy or convulsions. Morgagni relates that after the long prevalence of a cold damp temperature, suddenly followed by violent heats about the month of May 1729, a great many instances of sudden death occurred. Apoplexy was very frequent in Italy during the years 1694 and 1695. Baglivi ascribes this circumstance to an uncommon

have observed that this soporific constitution always takes place during cold rainy weather.

This affection is observed chiefly among persons descended from parents who have died of it. It attacks those advanced in years, of a plethoric corpulent habit, who have a large head and a thick short neck, who lead a sedentary life and take little exercise; those who have applied long and with too great assiduity to study; who are subject to frequent transports of passion, or who are exposed to grief, and constant or frequently renewed uneasiness. On the one hand, all those who enjoy in profusion the pleasures of a sumptuous table and all the conveniences of life, and who do not make a suitable use of their bodily powers; and on the other, indigent persons, who exhausted by excessive labour can with difficulty procure the means of maintaining a miserable existence; and among the latter, those who use to excess spiritous liquors.

This disease, in general, announces itself, even a long time before, by a series of phænomena more or less permanent or transitory: such as pains in the head, vertigo, ringing in the ears, the appearance of lights and images floating before the eyes, transient dimness of sight, tendency to sleep, numbness of the limbs, with a sensation of prick-

constitution of the atmosphere, to the misery and calamities inseparable from a war of seven years, and to the general terror occasioned by frequent earthquakes.

ing,

ing, subsultus tendinum, partial and transient palsy, repeated faltering of the voice, habitual torpor of the senses and thoughts, vacillation of memory, &c.

With these dispositions the accession is often produced by some appreciable cause: such as the sudden impression of intense cold or violent heat, exposure of the head to the scorching ardor of the sun, violent efforts, excess at table, a violent moral affection, a transport of passion, sudden fear or terror, excessive joy, incoercible laughter, violent percussion on the head, and sometimes no apparent cause.

The disease may exhibit three principal degrees of intensity.

In the first it is slight or imperfect; attacks only the sensibility of certain parts, the contractility of certain muscles, which it reduces to a greater or less state of torpor, but from which it is always possible to free the patient instantaneously. In this state, there is observed sometimes a simultaneous diminution and loss of sensation, or an alteration of voluntary motion, while sensation remains unimpaired. Sometimes the affection is confined to a small number of parts, or it extends over one side of the body. Sometimes there is a convulsion in the muscles which have not been palsied. If the patient be roused from his drowsiness by any sudden or abrupt question, he can speak, and move

some of his limbs; but these intervals are short, and he soon falls again into his former condition.

After a certain period, an abundant and universal sweat, which affords relief, sometimes comes on; a copious excretion of thick urine, a hæmorrhoidal flux, evacuations by stool, vomiting, &c.; and these natural movements, when they exhibit the characters of critical evacuations, are signs of a favourable termination. The author of the book *De Morbis**, and Aretæus, consider the cure as certain when the fever declares itself before the seventh day; and the former considers the disease mortal if it passes that period without fever. In a word, it commonly follows the remittent type; for the most part exhibits characters of pernicious fevers; and it is in its violent paroxysms that its salutary or fatal termination is effected. The slightest apoplexy, for the most part, is attended with dangerous consequences, and almost always paves the way for subsequent attacks, which at length become fatal. Sometimes even it proceeds in the same paroxysm to the degree of violent or complete apoplexy.

In the second degree, there is a loss of voluntary motion, of sensation, and of the intellectual functions, with an insuperable drowsiness: the fever is rarely useful, and the danger necessarily increases in the ratio of the number of the follow-

* Ascribed to Hippocrates.

ing symptoms: weakness or even palsy of some of the interior organs; impossibility of deglutition; constipation, or frequent stools of a bad nature; swelling of the abdomen; incontinency or retention of urine, from which sometimes arises gangrene in the bladder, in the organs of generation, and in different parts, but particularly in those on which the body specially rests; sonorous and loud respiration, with foam at the mouth; coldness, with sweat in the upper extremities. Old age, a weak or worn out constitution, the great number and long continuance of the previous symptoms, are all causes which aggravate the malady, and render it more fatal.

In this case, the patient rarely escapes death; and if he does, he still more rarely recovers that state of health which he before enjoyed. A palsy, more or less complete, always remains for the most part in one of the sides, and sometimes in all the lower extremities; a læsion of some of the faculties, or a complete abolition of the function of the intellectual organ, with a sort of imbecility*. At length, if the patient survives, he drags out a miserable existence, which is gradually destroyed; or he falls a sacrifice to the first paroxysm, which will infallibly take place sooner or later.

This disease, when carried to its utmost de-

* The instance of Malpighi related by Baglivi.

gree of intensity, kills in a moment, like a stroke of lightning.

On opening the bodies derangements have often been found in some parts of the brain*; but these derangements are far from being constant in this malady, and are often found on opening the bodies of persons who have died in a different manner. Besides, organic derangements of the brain, which come on slowly, cannot be the cause of an affection so terrible and so sudden. Very often, no alteration whatever is observed in the encephalic organ; so that, when a few marks of læsion are found in the brain, it cannot be asserted that they were the cause or even the effect of the disease and of death.

The rupture of some blood-vessel has generally been considered as the cause of this malady, and the treatment has been directed by this supposition; but extravasated blood is seldom found in the brain, and, when this is the case, the most dangerous accidents of the disease cannot be ascribed to it. Morgagni gives an account of the phænomena observed on opening various bodies; and from

* Turgidity of the blood-vessels, effusion of blood or serous matter under the dura and pia mater, in the anfractuosities, in the ventricles, in the cavities formed by the laceration of the brain; phlogosis, thickening and suppuration of the membranes; ulcerations; purulent and often sanious congestions in the encephalic organ; ossaceous tumours, depressions of the cranium with or without fracture, &c.

these histories it appears probable that a matter discharged in the interior of the brain has been absorbed. Some facts prove that a purulent collection, the existence of which could not be suspected, and which produced no comatose symptom, had made a passage for itself outwards, by an exfoliation of the whole thickness of the cranium.

After the operation of trepanning, individuals have died, though a passage was made for the blood to escape. Others have been cured without any blood being found; and at present, when trepanning is less employed than formerly, it is not observed that more persons die in consequence of wounds in the head.

Comatose affections, which come on after violent blows on the cranium, do not seem to depend essentially on fractures, and on collections of extravasated blood which may be formed; but much rather on the commotion, agitation, and greater or less pressure which have taken place, and which sometimes are such that the brain seems to have experienced a sort of partial death. On opening the cranium, indeed, when the patient has survived several days, it is found in part decomposed and without consistence in the place which had suffered most.

Morgagni relates several cases of this kind where the brain was found flabby, soft, and sometimes in a sort of putrid state.

This malady seems to arise from a great diminu-

tion and sometimes a complete destruction of the action of the brain. In the history which some original observers give of it, it is seen that it appears sometimes to be subject to the general influence of climate, of seasons, of the morbid constitution of the atmosphere, and particularly of those causes which, for the most part, produce continued pernicious fevers, and all affections connected with nervous debility. It is owing to moral affections which depress the nervous action; to the too frequent use of exhausting excitement; to the withdrawing of stimulants necessary for maintaining it: in the last place, it is the disease of old age, a period when vital action is generally very much diminished.

There can be no doubt that the brain is the essential seat of this disease; but it is very often in the abdominal region that it displays the previous symptoms of its attack*. Hence, there are observed a long time before: loss of appetite, loathing, frequent indigestion, flatulencies, &c. irregularity in the intestinal action, dull and long continued pains in the abdomen, vomiting. Though Morgagni seems to dwell with a striking predilection on the slightest alterations which he found in the inside of the cranium, his work contains histories in which he has described the most remarkable derangements in the thorax and abdomen, such as læsions of the heart,

* It would appear that, in this case, the weakness of the brain begins to manifest itself on the organs of digestion.

pericardium,

pericardium, liver and pancreas; evident traces of chronic phlegmasiæ in the intestines, the bladder, &c.; calculi found either in the bladder or in the kidneys: all facts, which, on the first view, do not seem to present so intimate a relation with the disease as extravasations, turgidity of the vessels, and ossæous tumours found in the cranium; but which indicate that the disease, instead of being a simple affection, arises rather from a very complex derangement; that it is the combined result of a multitude of diseases, which, if I may use the expression, have been a long time brooding, which are gradually formed and in silence, to burst forth afterwards at once, and to attack life in its most intimate recesses.

In this disease, the state of the pulse does not exhibit a character sufficiently constant to enable us always to deduce from it a certain induction. In general it retains fullness, and even hardness and a great deal of strength, till a short time before death. It is to be observed that physicians have remarked almost the same strength of the pulse in that kind of apoplexy which they ascribe to collections of serous matter in the brain, and in that which they suppose to be owing to a collection of extravasated blood.

It is of importance that this disease should be distinguished, according to its principal causes, into several kinds.

1st. One appears to be produced, in a special manner, by an active determination of the blood towards the head, and a hæmorrhagic rupture; it is characterized by the age, the habitual constitution of the individual, and circumstances proper for maintaining and producing a plethoric state. Its attack, according to Stahl, is preceded by violent and heavy pains in the head, vibration of the carotid veins, intumescence of all the vessels of the head, swelling and intense redness of the face and neck; at the same time paleness, constriction and coldness of the lower extremities.

2d. Another seems to arise from a weakness or debility of the cerebral organ. It is peculiar to old persons, and those exhausted by excesses of every kind; by long want of the necessaries of life, by strong mental affections; and, in the last place, by a natural diminution of vitality in old age. It is this kind in particular which is preceded by slow and gradual symptoms, and which is gradually formed, though its attack is often very sudden.

These two types, very distinct from each other, are only a result of abstraction, and form in some measure the two ends of a chain, all the intermediate links of which may represent so many individual cases, more or less approaching each other. This is all that art can do: it marks out the extremes, that it may employ them as points of comparison.

3d. A third kind is produced by a sudden commotion, after a blow, an electric shock, or a stroke of lightning. It makes its attack, without distinction, in all circumstances of age or constitution, and without any kind of predisposition.

Remedies more varied and violent have been employed in this disease, as it is in general more fatal. They, however, all consist in bleeding, and stimulants of greater or less strength.

Bleeding seems to be indicated only for the purpose of speedily suspending those accidents which may result from an afflux of blood towards the head : it appears in such cases to be of great benefit, and ought to be copious : but it is hardly possible to conceive how bleeding can be useful when there is a collection in the brain. If any collection be formed, the only thing to be wished for is that resorption may take place ; and it is not by diminishing the strength that this can be promoted. Thus, even when it is necessary to bleed copiously, to suspend the determination of blood towards the head, which may occasion speedy death ; to have been obliged to employ debilitating means soon becomes hurtful, in regard to the consecutive accidents which may arise from weakening the brain ; and it would be useful, after the first accidents have been removed by bleeding, to be able to restore the blood which has been taken from the body, and to give back even an excess of tone to the individual,

dual, that he may have power to resist further accidents, which, in general, prove fatal.

Stimulants do not seem to be proper in the first kind of apoplexy; and in the second they ought to be employed with great caution. When too strong and too long continued, they exhaust instead of exciting the vital forces. In general, active medicine has been attended with so little success in the treatment of this disease, that it would be prudent to adhere to the small number of means which seem rigorously necessary, and to be clearly indicated; and to prohibit altogether that chance application of very active means, which without doubt are often very prejudicial in *apoplexy*.

ASTHENIC AFFECTIONS.

134. THE organs are susceptible of experiencing different degrees of weakness, and in these cases they exhibit a great variety of phænomena in the exercise of their functions.

These phænomena are particularly remarkable in the muscular system.

Thus, in old men ; persons of a weak, soft, and relaxed constitution, indolent and sedentary, who sleep a great deal, and live in a luxurious manner ; persons exhausted by late hours or excessive labours, abuse of pleasures, or by poverty, and in a word by all debilitating causes ; in cold damp countries and seasons ; sometimes after a great and sudden derangement of some functions which have become habitual ; after a violent moral affection, an attack of apoplexy, a blow on the head or the spine, &c. ; sometimes even among men in full vigour of life, palsy takes place in different parts of the muscular system.

Its attack is sometimes sudden and violent ; at other times it announces itself slowly, by heaviness, numbness, and a sensation of cold in the part which is threatened ; motion is at first difficult, and then becomes impossible. The palsy gradually advances, or attacks very distant parts.

In certain cases, particularly after apoplexy, it affects more or less uniformly a whole side, comprehending the trunk, the neck, the head, and even the odd or central parts, such as the nose, the mouth, the tongue, the uvula, the pharynx, and perhaps even the whole series of the digestive canal; sometimes the side not palsied is affected with convulsive movements. If the disease continue a long time, the intellectual faculties become weak; and another attack of apoplexy puts an end to the patient's existence.

In other cases, the palsy confines itself to the pelvian limbs, and to the organs contained in the abdomen, below the navel. The urine and stools then flow involuntarily; a swelling of the limbs takes place, flow fever, sometimes gangrene, and at length death.

After these two principal forms, nothing is observed but inconstancy and great variety. Thus the palsied eye-lids cover the ball of the eye; palsy of the tongue produces loss of speech; that of the larynx aponia; deglutition is prevented by that of the pharynx and of the œsophagus.

A distinct palsy may take place in every part furnished with muscular apparatus, such as the sphincter ani, that of the bladder, the penis, a foot, a hand, a finger. It may attack separately the extensor or flexor muscles of one part, and even a single muscle in particular, as in the torticollis. (*Obstipité.*)

Muscular

Muscular weakness, incoercible tremor, complete abolition of voluntary motion and sensation, are the different degrees of intensity of this disease.

A palsied limb may exhibit varied symptoms, according to the nerves particularly affected, and to the intensity of the affection. If it be recollected that a limb is furnished, 1st, with nerves which are distributed to the muscles; 2d, with those which creep along the skin; 3d, with those which accompany the vessels; the different degrees of alteration which these organs must experience will excite very little astonishment.

The muscles are the first parts which exhibit signs of palsy; then the skin, which sometimes loses the sense of feeling: at last, the nervous action of the vascular system begins to be weakened.

When a limb is palsied, it is observed that its warmth decreases; it becomes wasted, and at length loses all sensation and the power of motion.

When the palsy is characterized by the loss of motion and sensation, and if it continues a long time, it is often observed that the muscles, tendons, aponeuroses, and cellular tissue, skin, &c. lose their organic structure, and are transformed, more or less completely, into a homogeneous substance of a ligamentous, membranous, or pulpy nature. This phenomenon is very analogous to that of the *conversion into fat*, or transformation into adipocera, observed in some burying-grounds
saturated

saturated with dead bodies*. The chemical force of affinity, modified and checked by a remnant of vital action, which the limb still retains, seems to be the cause of this conversion.

When the palsy of a limb is characterized not only by the loss of sensation and motion, but by weakness of nervous action in the vascular system of all its parts, there is a period when the vital force, which still exists, is not sufficiently strong to counterbalance the chemical action, and then one of the two following phænomena takes place :

Sometimes a limb or the portion of a limb becomes cold, dries up, turns black without breaking, and thus wastes slowly away. This accident produces an increase of action in the rest of the part, and there is formed a reddish, painful circle, which bounds the mortification. This phænomenon is evidently analogous to that which takes place in a limb suspended in the open air, and which experiences rather a sort of desiccation than real putrefaction. In order that this phænomenon may take place, it is essentially necessary that the epidermis should remain untouched, and that it should become dry, and secure the subjacent parts from the

* Chemists have found that this adipo-cereous substance is ammoniacal soap. They are of opinion that the azotic and hydrogen gas, disengaged during putrefaction, by combining together form ammonia ; and that this alkali unites to the fat to produce soap. The result of the transformation which takes place in the limbs of some paralytic persons has not yet been analysed.

contact of the air. Without these conditions another phænomenon takes place.

In the latter case, as in the preceding, when the vital force is so far diminished that it is incapable of counterbalancing with advantage the force of affinity, the external parts, and, in particular, those which support the body, or which are in mutual contact, exhibit vibices or eschars of greater or less depth : the vital action is then exalted around these mortifications ; a small degree of pain takes place, a reddish circle is formed, and the dropping off of the eschar leaves a solution of continuity. If the vital power continues to become weaker, that of affinity gains in proportion ; and in this state of things the action of the oxygen of the air on the part deprived of epidermis, the moisture of the limb, and the little heat it retains, produce a phænomenon similar to that of putrefaction, and which is checked or modified only by a remnant of vital power.

But between the state of desiccation of the limb, to which the name of dry gangrene has been given, and that of modified putrefaction, called humid gangrene, there are a great many intermediate shades of a state, of which we here exhibit only the two extremes. A complete mortification of any part is called *sphacelus*.

On opening the bodies of persons who have died of the palsy, traces of alteration are sometimes found in the brain, or along its vertebral prolonga-

tion : such as sanguinolent or serous collections, tumours, abscesses, ulcers, &c. It is commonly towards the lumbar region that the causes of palsy of the pelvian limbs are found. Forestus saw palsy of the thoracic limbs take place after a blow with a stone on the cervical region.

This disease is always exceedingly dangerous, when it does not arise from an accidental cause : it then indicates a profound derangement in the nervous action, and the slightest accession of palsy gives reason to apprehend a fatal return.

In this disease, the prognostic is the more fatal as the affection is more extensive and intense. It is the more so when it attacks the interior organs ; when it destroys sensation, and when there exists in the parts neither pain nor a sensation of pricking. It is more troublesome at an advanced period of life ; in autumn and in winter ; in persons exhausted by a great concurrence of debilitating causes, &c. The palsy which succeeds metallic colics is not always fatal, except that of the lower parts, which almost invariably terminates in death.

A view of the circumstances which give rise to its development or attack is sufficient to indicate the precautions capable of preventing, or the means proper for combating or retarding, the fatal effects of *muscular palsy*.

135. There is one affection peculiar to the limbs,

limbs, which seems to arise from a weak and deranged state of the nervous action, and which is partly real and partly voluntary. It affects chiefly young persons, between the age of ten and fourteen, and for the most part before the period of puberty. It announces itself by convulsive motions in the foot and leg of one side; and, in general, of the left. When the patient attempts to walk, the leg seems to be half palsied, and drags on the ground; the arm also is subject to convulsive agitations of the same kind, especially when the individual tries to move it in order to use it.

It appears that this disease arises only from want of power, in consequence of convulsive shocks, to regulate with precision the motions of the limb. This inability seems to be owing to great weakness of nervous action in the muscles; but it is also probable that these convulsive movements are maintained, or acquire more intensity, because the patient gives way to them.

This affection is propagated in a singular manner by imitation. It has been seen at Ulm, like a kind of epidemic disorder, at the festival of St. Vitus, and in the Cevennes, at that of the Holy Virgin. *St. Vitus's dance.*

136. *Astheniæ of the organs of the senses.* There are some persons who, though their eyes are ap-

parently free from any blemish, see less distinctly than others. (*Amblyopia*)

This affection may arise from two very different causes :

1st. A diminution of the sensibility of the retina.

2d. An excess of sensibility in the pupil.

This disease has been ascribed also to a change of density in the humours of the eye, which it is impossible to observe.

When weakness of sight is occasioned by a diminution of sensibility in the retina, the pupil contracts with less force on receiving the impression of light, and remains habitually more dilated.

The weakness of the retina is sometimes so great, that the person cannot see distinctly but in the day-time ; his sight ceases entirely at sun-set, notwithstanding the influence of artificial light, or of that of the moon*. This affection, which consists in being thus *deprived* of vision during the night, is distinguished by the name of *Nyctalopia*.

One affection of this kind is sometimes epidemic, and even endemial, and shows itself in the spring. It exhibits some analogy with catarrhal affections, and is cured spontaneously.

In this disease, vision is distinct as long as the

* According to Bouguer, the solar light is to that of a candle placed at the distance of 16 feet as 11,664 to 1, and to that of the moon as 374,000 to 1.

sun is above the horizon, but decreases as he becomes lower; the eyes are obscured by a sort of cloud or smoke; the pupils dilate; sometimes the eyes are exceedingly watery; the sight is entirely extinguished at sun-set, and notwithstanding the strongest artificial light, or that of the moon, does not return till sun-rise.

Certain persons see several objects at the same time, or the same object multiplied, and the sight is confused. This affection may arise from the sensibility of the retina being weakened in the point struck by the direct rays; so that the oblique rays produce on the other parts of it an impression equally strong, and the object is multiplied.

When weakness of sight arises from an excess of sensibility in the pupil, the pupil contracts strongly on receiving the impression of a weak light, and remains habitually closer. In this case the contraction of the pupil does not allow it to receive a pencil of light sufficiently strong to produce vision, especially if the object be at a considerable distance.

The sensibility of the pupil is sometimes so great that the eye cannot endure the light of the day (*Hemeralopia*), and the person sees best in the night-time*.

In

* This disposition seems sometimes to be the result of an opacity in the centre of the crystalline humour, which intercepts

In the case of too great sensibility of the iris, it is observed that the sight is strengthened by remaining a long time in the dark. It is lengthened by employing a simple tube, because the lateral rays, the vivacity of which produces the excessive contraction of the pupil, or a plurality of images, are then excluded; and it is preserved by plane glasses of a green colour, which suffer no rays to pass but such as are faint, and accompanied with a great deal of shade. In hot and sandy countries they are indispensably necessary.

It sometimes happens, but chiefly to persons who are long-sighted, when they look at distant objects exceedingly luminous, in a very bright atmosphere, or when the eye itself is immersed in a very strong light, that they perceive between the eye and the object, images which always correspond at the same distance of the visual axis, and disappear when the object is very near. These images are sometimes seen through the eyelids when the day-light is very strong, and disappear in the dark.

Boerhaave ascribes these images to a diminution or complete abolition of sensibility in certain parts of the retina.

Some persons who are long-sighted, when they

the passage of the rays of light in the day-time, by the contraction of the pupil, while its dilatation in a weaker light permits the rays to pass towards the opaque part of the crystalline humour.

look

look steadily at any object of one colour, or of a dazzling whiteness, and somewhat distant, particularly in the heavens, sometimes see luminous bubbles continually floating up and down, &c. Boerhaave ascribes this phænomenon to the presence of small, solid, transparent bodies floating in the aqueous humour.

In certain cases of disease, some persons, while asleep or awake, see small luminous spots or sparks of fire. These commonly appear also after some external violence, a blow on the head, strong fit of sneezing, &c.

137. The eyes sometimes appear to be perfectly sound in persons totally blind. In this case these organs exhibit no animation; have often a squinting appearance, and the individuals show a kind of stupidity in all their actions, and uncertainty in their motions. The pupils, for the most part dilated and sometimes contracted, do not move on receiving the sudden impression of a strong light; and the eye-lids do not wink on the sudden approach of the fingers.

This affection takes place, in general, in a very slow and a gradual manner; sometimes it comes on suddenly. The existence of complete blindness may be known by several signs, which vary in their intensity, from mere weakness of sight to absolute blindness; which, in this case, has been

distinguished by the name of *amaurosis*. (*Gutta serena*.)

Sometimes, especially in the commencement of the amaurosis, the iris continues to contract on being exposed to a strong light; this contraction seems to arise merely from the sensibility of the iris. In this case, the momentaneous contraction of the pupil is soon succeeded by a very great dilatation, which continues. This affection may be confounded with the brown or black cataract; but this case is very rare.

Amaurosis arises from a palsy of the retina, of the optic nerve, or of its layers in the brain. It almost always takes place gradually; it is, however, produced sometimes instantaneously by causes of general palsy: such as a violent blow on the head, læsion of the frontal ramus of the ophthalmic nerve, &c.

This disease is always exceedingly troublesome, and affords very little hope of a cure.

It is difficult to say how far bleeding, emetics, purgatives, vesicatories, scarification, setons, electricity, &c. may be useful; all of which are certainly employed too readily and with too much confidence.

138. The sense of hearing is susceptible of being weakened, and even of being entirely destroyed. This disease may arise from a weakness

or

or palsy of the acoustic nerves. (*Dulness of hearing, deafness.*)

In the case of dulness of hearing through weakness of the organ, it may readily be conceived that it may be diminished by the use of an ear-trumpet, which will convey into the ear a greater mass of air in a state of vibration. The organ of hearing is subject also to other peculiar and uncommon affections, the cause of which is unknown. Thus, a person sometimes hears only in a confused manner words pronounced with a loud voice, and at the same time can distinguish weak sounds. Sometimes a weak sound produces on the organ a painful sensation; at other times a sound cannot be understood but by the help of some loud concomitant noise; a double sound is sometimes heard, &c. The use of the different parts of which the system of hearing is composed, has not yet been determined with sufficient precision to enable us to account for all these anomalies.

139. The sense of smelling is sometimes weakened, or even entirely destroyed, by weakness or palsy of the pituitary membrane.

140. In man, the organ of generation is susceptible of different affections which arise from a state of weakness or spasm.

Some men, who have a proper erection, and perform

form completely the act of coition, ejaculate too slowly, with difficulty, or not at all. Sometimes, though the sensation which accompanies ejaculation takes place, it is only at the end of a certain period, and with slowness, that the sperm begins to flow.

This infirmity arises from a weakness of the parts which concur to produce ejaculation*; from an excess of vigour and tension in the penis†, or from a derangement in the structure of these organs‡. *Dyspermatismus*.

In some persons the penis is incapable of erection; there is also an abolition of desire for coition, or an impossibility of gratifying it. This affection may arise from a weakness in the nervous action of the whole system of generation. It is often the consequence of excess with women, or of masturbation; it comes on also sometimes in the moment of enjoyment, ardently pursued for a long time with a continued erection. It may afterwards be renewed by the force of imagination, every time that the fear of a similar accident oc-

* Instances of this kind of infirmity may be found in Amatus, Marcellus Donatus, Forestus, &c.

† Of this kind is the case of the Venetian to whom Cockburn recommended the use of debilitants.

‡ As a tumour or nodosity in the urethra; cicatrices before the aperture of the spermatic ducts; constriction of the canal. See *Mem. de l'Acad. de Chirurgie*.

curs to the memory during the act of coition*.
Impotency.

141. Each part of the arterial system resists the continual pulsation of the blood, and retains its usual diameter by the tonic force of its sides. If this force happens to be diminished in a part of an artery by any cause whatever, that part yields to the impulse of the fluid; and if this first degree of weakness continues or increases, the artery experiences in the part a dilatation, which in the course of time generally increases.

When the affected artery is situated in the thickness of a limb, the progress of the tumour may be followed. It is at first small, round, and without any change of colour in the skin. In general, it produces neither pain nor restraint in the motion of the limb; it exhibits pulsations perfectly isochronous to those of the pulse, and which depend on its successive and instantaneous development. These pulsations decrease, or even cease, when the artery is compressed above the tumour. On the other hand, if the artery be compressed below the tumour, they increase. The tumour, when

* The reader may see in Montaigne (on the imagination) an account of the mysterious practices which he employed to overcome the effect produced by vain threats on a too credulous mind. The reader will there also find the best means for defeating the *noueurs d'éguillettes*.

pressed, subsides and disappears with a certain noise, and re-appears as soon as the pressure is removed.

The arterial tumour increases at first very slowly; but at a certain period it soon acquires a considerable size. It then becomes hard and renitent, and does not entirely disappear by pressure. Its pulsations are more faint, and in a little time nothing is perceived but a sort of tremor. The limb exhibits a soft, flabby tumefaction; it becomes painful, and covered with distended veins. If the disease be left to itself, the part is at length affected with a gangrenous phlegmasia; and when the eschar drops, the patient dies of a hæmorrhagy.

Aneurism.

By the aperture of aneurismal tumours, at different periods, we learn that the artery, for the most part, dilates in an uniform manner in its whole circumference, and assumes the form of an olive. The tumour, when it becomes more voluminous, seems to have increased only towards those parts which offered the least resistance; it adheres to the skin by a compact cellular tissue. The muscles are often found thin, and the bones deformed or destroyed.

The aneurismal bag is lined with curds disposed in strata, the consistence of which decreases inwardly from the outside. If it be entirely emptied, it is found that the dilatation has been effected on

one of the sides of the artery, and that the sides of the bag are formed only by the exterior tunic of the artery considerably thickened. The edges of the other two tunics are indeed still observed to be fringed in an irregular manner by their bursting, when the artery acquired too sudden and too great increase.

It is sometimes difficult to distinguish an aneurismal tumour of a limb, especially when the pulsations are scarcely felt through the considerable thickness which the bag acquires in the last stages of the disease. Besides, any tumour situated on a large artery may be raised up by the beating of that vessel, and thus exhibit pulsations capable of leading into a mistake.

Aneurism of the heart is much more difficult to be distinguished; the case is the same with that of the aorta, either where it passes through the thorax or the abdomen; and, in general, this malady is not characterized until it has made some progress. Aneurisms of the breast, however, always produce derangements capable of attracting attention: such as palpitation of the heart, at first slight and afterwards violent; difficulty of respiration, which is increased by exercise; agitated sleep; more striking uneasiness in certain positions, &c.; different alterations in the pulse, which in general is hard, close, intermittent, and always irregular.

The symptoms multiply and are aggravated as the
tumour

tumour increases; the pulsations become sensible under the hand, and the part by the effort of repeated beats is deformed. The vertebræ, the ribs and the sternum are bent or destroyed. Sometimes the pulsations are sensible to the sight; they produce a general shock, and raise up the trunk at each beat of the tumour. The voice is more or less altered and hissing; and if the tumour compresses the trachea and the œsophagus, deglutition is difficult.

All these phænomena may exhibit transient moments of remission; but afterwards the cheeks become injected, the lips projecting, and of a violet colour; the limbs cold, and sometimes œdematous; the breast ceases to produce the same sound by percussion; fits of suffocation are frequent, and almost continual; and the patient at length falls a sacrifice to them, if not carried off before by a hæmorrhagy resulting from the rupture of the aneurifimal bag.

Aneurisins of the abdomen exhibit only a part of the preceding phænomena; but they can be much more easily distinguished by the touch; and De- fault asserts that the character of the aneurifinatic pulse is always found in the crural artery.

Aneurisins take place more readily in the heart, the aorta, and the large arteries, where the impulse of the blood is stronger, and where the sides oppose less resistance than those of the small arteries.

The

The causes which produce aneurisms are very obscure. These affections, in general, are ascribed to violent and continued muscular efforts, melancholy moral affections long continued, &c. In some cases, the disease is not only local, but seems to extend to several parts of the arterial system, and there then exists a sort of aneurismatic diathesis. Others besides Dehaën have found in the same body a great number of aneurismal dilatations.

This affection, when it attains to a certain degree, becomes incurable, and the fatal effects of it can be avoided only by complete obliteration of the dilated artery, when a ligature can be formed on it, and when the collateral arteries are able to discharge the functions of that which has been suppressed; so that the operation of aneurism, though painful, is always the surest method of cure.

Several instances of cure by the repeated use of bleeding, of acid beverages, and of severe regimen long continued, are quoted on the authority of Valsalva. These means, though very uncertain, are the only ones which can be employed for aneurisms of the heart, or of the arteries contained in the large cavities.

142. When an artery has been opened by any instrument, the blood discharged is accumulated in the surrounding cellular tissue, and produces a tumour,

mour, which increases the faster the more easily the cellular tissue yields. This tumour is not circumscribed, but exhibits an irregular form, unequal, and as if indented. Its volume decreases very little by pressure, and it does not exhibit very manifest pulsations, but a sort of quivering. The skin assumes a yellow violet colour. The parts distended beyond measure by the accumulated blood, become gangrened, and the patient is soon carried off by a hæmorrhagy. In this case, the artery always occupies the base of the tumour; it retains its usual diameter, and exhibits a circular or elliptical aperture.

Obliteration of this artery is still the only means of securing the patient from the fatal consequences of this disease, which is called *a false aneurism*.

143. It happens, in some very rare cases, that the artery has been opened by an instrument which passed through a vein placed directly above it. When the hæmorrhagy has been stopped, the blood continues to pass from the artery into the vein, and the latter becomes dilated. *Varicose aneurism*.

144. The veins are also subject to dilatations, observed for the most part in the legs, sometimes in the thighs, and even on the integuments of the abdomen. These dilatations may take place in every

Every part of the body, and hæmorrhoidal tumours are nothing primitively but dilated veins. *Varices*.

Varicose veins, which in general are superficial; have a serpentine form; are interspersed with knots, and always have a blueish appearance. They are more apparent after walking or long standing, and when the limb is compressed by a ligature placed above the part. On the other hand, they decrease or totally disappear by rest in a horizontal position, and by moderate and uniform compression.

At first, varices are always formed by a simple dilatation of the veins; they are soft, and sink down on the least pressure: but in the course of time they exhibit great renitency, yield only slowly when compressed, and sometimes become hard and as it were scirrhus. In this case it appears that the surrounding tissue has been thickened by a sort of chronic phlegmasia.

Recent varices, when small and few in number, are scarcely worthy of attention; but in the course of time they multiply, become painful, and on bursting give rise to repeated hæmorrhagies. Sometimes they produce incurable chronic ulcers.

Varicose tumours are observed chiefly among persons who by their situation are obliged to remain standing in low, damp places, or to carry slowly very heavy burthens; among pregnant women; individuals whose hypochondrium is the seat of some chronic affections; and among those

who have long been afflicted with some malady in the legs, &c. They take place only in the superficial veins, which are little supported by the neighbouring parts. The progress of their dilatation may be checked by constant, gentle, and uniform pressure : for the legs, a bandage or stocking made of strong leather or cloth will answer the purpose.

145. Serous fluids secreted by the sero-fibrous surfaces of our organs may not be assimilated, digested, and properly taken up by the parts which contain them. The quantity of fluid absorbed may not be proportioned to that produced ; because the secretion is more active, or because absorption has been checked. In this case, the serous matter accumulates, and produces a series of affections of the same order, but which exhibit phænomena very much varied according to the parts where they are found.

DROPSIES.

146. One is peculiar to children, who often bring it with them at their birth. It has its seat in the cranium. This cavity acquires a volume more or less extraordinary, which forms a singular contrast with the usual dimensions of the face and with those of the trunk and the limbs, which increase very little, and particularly the thoracic limbs. The cranium acquires a sort of transparency, more remarkable towards the fontanellæ, and

and the futures are often separated. The forehead is considerably extended, and the orbits are depressed; the eyes project, turning outwards and downwards, and are half covered by the lower eye-lids.

The child is generally stupid, melancholy and drowsy. Sometimes vertigo and convulsions come on; it is affected by sounds if any way loud, and by all rude movements. The inferior limbs become palsied, and the vertebral column is bent, &c.

This disease is sometimes produced by a blow on the head; but, in general, the causes which give rise to it are unknown. When the futures are separated, the patient seldom lives more than three or four years; if the intervals between the bones become filled up, it is by the development of supernumerary bones; and the child may then live longer, but it rarely attains to the age of puberty.

On opening the body, the cranium is found to be filled with serous matter. The brain distended is sometimes so thin as to have the appearance of a very fine membrane; which has induced some to imagine that it is entirely wanting. The seat as well as the quantity of the matter collected is subject to great variation: this fluid is found between the cranium and the dura mater, between the latter and the pia mater, and between these membranes and the brain; but for the most part it appears to have begun in the ventricles.

We are taught by observation, that by giving vent to the serous matter immediate death is occasioned. Pretty strong compression on the cranium is also fatal; and the advantages said to be derived from salivation are not sufficiently proved.

In this disease, the cranium sometimes is scarcely deformed; but a soft and semi-transparent tumour, which has a communication with its cavity, is observed on a certain point of its circumference, and particularly towards the occiput. *Hydrocephalum.*

147. A soft and transparent tumour is observed also among children, on one or more regions of the vertebral column, accompanied, for the most part, with palsy of the inferior limbs, and in the sphincters of the bladder and of the rectum. The cranium often appears to be more expanded; the fontanellæ, and particularly the anterior one, seem larger, and the skin which covers them rises up when the tumour of the back is compressed. If this tumour be opened, it almost always proves fatal.

On opening the body, the serous matter is found accumulated in the coverings of the vertebral prolongation of the brain; and it is observed that the posterior part of the vertebræ is entirely wanting. In certain cases the matter occupies only the space indicated by the tumour; sometimes it occupies that comprehended between several tumours; and it often happens that it extends the
whole

whole length of the vertebral canal, and communicates with a similar collection in the ventricles of the brain.

This disease is always fatal. It rarely suffers the individual to attain to the adult age; and no means can be employed but such as are calculated to prevent any compression hurtful to the tumour, and to retard its rupture. *Hydrorachitis. (Spina bifida.)*

148. The pleura, which lines the breast and covers the surface of the lungs, forms on each side of the thorax a bag with contiguous sides, in which the serous liquid continually secreted may accumulate. This liquid accumulates sometimes on one side only, and sometimes in both at the same time.

This disease, in general, is difficult to be distinguished. The phænomena by which it is most commonly accompanied are the following: Paleness of the face, with a puffed-up appearance, and especially in the lower eye-lid; confined respiration, which increases by motion and walking, particularly in ascending a steep place; dry cough; impossibility of remaining in a horizontal direction; necessity of lying on the diseased side, or of sitting, when the two cavities are equally filled; sensation of heaviness towards the lower part of the breast; coldness, exudation in the limbs.

The partial absence of air from the lungs, the

presence of an accumulated liquid, and the side where it exists, may be discovered by repeated percussion with the hand in a horizontal and vertical direction. Sometimes the lower part of the thorax, especially on one side, acquires a very remarkable development. At other times the hypochondria become swelled by the falling down of the diaphragm. A soft flabby swelling is often remarked on the sides of the thorax; swelling of the feet, hands, &c. It may happen that the pulsations of the heart correspond to some other place than that to which they correspond in the natural state, especially when the collection exists only on the left side: the latter phænomena, however, do not exclusively belong to this malady. Some persons also start up in their sleep, and experience a sort of suffocation: but professor Corvisart is of opinion that these symptoms are not so much owing to dropsy of the breast, as to organic læsions of the heart, with which it is often accompanied.

Sometimes the collection is speedily formed in the course and towards the end of an acute phlegmasia of the breast. In that case, its existence can be discovered only on opening the body. At other times it is produced, or at least shows itself, a long time after the acute phlegmasia has ceased.

In some cases the collection seems to be the result of a chronic phlegmasia of the lungs, the traces of which are discovered after death. In this case,
if

if the collection has been slowly formed, the fluid appears to be limpid. In the case of acute phlegmasia, it is almost always thick, white or puriform, and interspersed with clots or albuminous flakes ; or, if it be somewhat clear, albumen concreted into false membranes is found floating in the serosity, or lining the costal and pulmonary part of the pleura.

In the last place, this serous collection often accompanies aneurisms of the heart, dilatations, ossifications, and other alterations of that organ or of some large vessels : the collection, in this case, is often very opaque, and is not confined to the cavities of the thorax.

This affection appears to be sometimes produced by drinking too large a quantity of cold water when the body is heated. It often succeeds the abrupt suppression of some old or habitual evacuation ; an interversion of the gout, some affections of the skin, or eruptive fevers. But it has been already seen how these circumstances may concur towards the production of phlegmasiæ, especially chronic ones, of different organs, and particularly of the pleura or lungs ; so that, in almost all cases, the collection ought to be considered as the result of a disease of one of the thoracic organs ; on which account, medicine furnishes very few means to prevent it from terminating in a fatal manner. *Hydrothorax.*

149. A collection of serous matter may be formed also in the pericardium; but this kind of dropsy rarely exists alone, being for the most part accompanied with hydrothorax, or even general dropsy. In other respects, every thing said in regard to the preceding kind of dropsy may be applied to the present one. Its diagnostic is still more difficult. There are however observed, in common, a very evident state of weakness, with a difficulty of respiration greater than in hydrothorax, and which opposes almost every kind of motion; anxiety which proceeds nearly to fainting; with frequent palpitation. The pulse, for the most part, is weak and concentrated, sometimes imperceptible, and often irregular and intermittent.

The greater part of these phænomena, which are those most frequently observed in dropsy of the pericardium, belong to other diseases, by which indeed it is generally accompanied, but which may exist separately; so that they only furnish probabilities more or less strong, according as they are more striking and more numerous.

The pericardium may be affected by an acute or chronic phlegmasia. The characteristic symptoms of this affection are, for the most part, confounded with those which accompany phlegmasia of the pleura. On opening the bodies, indeed, the pericardium is often found to be filled with a fluid of a whitish colour or mixed with albuminous flakes, and sometimes
with

with a false membrane of greater or less consistence. In this case, the pericardium is often thick, and in several parts exhibits rugosities or ulcerations.

Very often the collection in the pericardium is accompanied with an organic alteration of the heart : in this case serous collections are found in the other cavities ; and the pericardium, only distended, exhibits nearly its usual texture. This collection is very common among individuals who fall a sacrifice to general dropsy. *Hydrocardia*.

150. The abdominal cavity is that in which the serous matter is most commonly accumulated. The belly swells progressively ; its tumefaction generally begins in the hypogastric region, and increases in an uniform manner. The projection of the abdomen increases towards its lower part, when the patient is standing or sitting ; and it throws itself towards the side on which he lies. The fluctuation is sometimes sensible to the touch, and even to the ear, when the body is moved ; but it may always be distinguished by applying the hand to the side of the abdomen, if the fluid be made to undulate by giving a few light blows to the opposite side. The abdomen sometimes, in lengthening, assumes an ovoid form. The navel often projects, and becomes distended in such a manner as to form a sort of transparent bladder.

This disease, in general, is preceded or accompanied

panied by an exudation from the legs or the genitals. Respiration is confined, especially when the patient is in a horizontal position; and this symptom is often accompanied with a dry cough. The last phænomena, as well as the volume of the abdomen, are increased by an accumulation of gas in the intestines: this may be easily known by the resonance of the epigastrium when struck with the hand. This accumulation of gas, which arises from a debility of the vital action of the intestines, produces in a great measure the tumefaction of the abdomen. *Tympanites.*

The patient frequently experiences a febrile state, more or less striking, with great thirst; the skin is dry, and the urine in small quantity and coloured.

Dropsey of the abdomen may take place at every period of life; but it is confined chiefly to mature and to old age. It is of great importance to distinguish those dropseys which take place primitively, without any organic alteration of the viscera; such as those formed in individuals naturally relaxed and weak, debilitated by long or severe diseases, abundant or long continued evacuations. In all these cases the disease for the most part is general, and affords great hope of a cure.

But the serous matter accumulated in the peritonæal cavity is in general the result of an organic disease, which may often be distinguished, and the traces

traces of which are always observed after death. It is, therefore, a chronic phlegmasia of the intestines, mesentery and peritonæum, &c. The peritonæal membrane is thick, covered with an albuminous stratum, interspersed sometimes with whitish granulations or tubercles. A swelling is then found in most of the mesenteric glands, and in several other parts of the abdomen. Sometimes there is one point of great sensibility, with a dull pain, and even transient shootings, in the diseased viscus.

This dropsy often accompanies also chronic or acute phlegmasiæ of the liver, the spleen and the lungs, and even organic affections of the heart and large vessels. In all these cases, it is not so much the dropsy that ought to be considered as the organic disease, the usual progress of which almost always conducts slowly to death. *Ascites*.

151. There is another sort of dropsy which generally takes place in the abdomen, and which, in this case, may be confounded with ascites. In this dropsy, the serous matter is not diffused throughout the whole peritonæal cavity, but is contained in a particular bag (*cystis*) produced by a phlegmatic action of the surrounding cellular tissue, or formed by the distension of some part or other.

Dropsies of this kind are found in the uterine tubes, in the uterus, the cavity of the epiploon, and

and sometimes even between the peritonæum and the sides of the abdomen. In this case, the collection is the result of an organic alteration by which it is always accompanied.

In general, it is possible to distinguish an encysted dropsy at its commencement. The tumour begins to make itself felt in a part of the abdomen, and the sides of that cavity offer more resistance there than in the other parts of its extent. The fluctuation is much less manifest, and in the different movements of the patient the aqueous collection is not displaced so easily as in ascites. The progress of the collection is not in general rapid. The tumour, however, may at length increase so much as to occupy the whole abdominal cavity. It often happens also that none of those circumstances which frequently occur in ascites are observed. The exudation which takes place sometimes in the lower extremities, seems much rather to be the result of a compression exercised mechanically, than of a general disposition to dropsy.

This disease affords very little hope of cure. The evacuation of the serous matter produces a momentary relief; but does not prevent the formation of a new collection. When the serous matter is accumulated in a membranous bag, it is possible that some success may be obtained by those means employed to prevent a return of the hydrocele.

In some cases, this kind of encysted dropies are merely an assemblage of small transparent vesicles, called *hydatides*, the nature of which was long unknown; but it is now ascertained that these globulous vesicles are so many worms of a particular kind (*Hydatides*).

152. The peritonæal tunic which envelops the testicle by its duplicature, suffers itself sometimes to be separated by an accumulation of a serous fluid. This kind of dropsy produces, at first, a remarkable swelling in the lower part of the scrotum, which rises as the accumulation increases. This tumour is indolent, exceedingly elastic, and has a kind of transparency. A fluctuation, more or less manifest, is felt in it. The raphe is always warped on the side opposite to the tumour. In this dropsy, the penis appears, in a great measure, to have entered the scrotum; but when the serous matter is accumulated only in the cellular tissue of the scrotum, it acquires a larger volume.

The testicle is generally placed in the middle, posterior, and interior part of the tumour, which exhibits the appearance of a suspended pear. This organ itself is, in general, more voluminous and hard, but without having more sensibility than in its natural state.

This dropsy is not so much a disease as a slight inconvenience, which induces the necessity of evacuating the serosity when the skin is sufficiently

ciently distended. It rarely disappears spontaneously, or by the application of simple topics. But it is almost always possible to cure it by all those means capable of exciting, in the peritonæal tunic, a degree of phlegmasia calculated to produce an adhesion of the sides of that membrane. In the case of the testicle being diseased, this practice should not be rejected, as is too often done. A moderate irritation, by suppressing the dropsy, might preserve the testicle, which on many occasions practitioners are too ready to extirpate.

During the first years of life, the peritonæal tunic of the scrotum has a communication with that of the abdomen, and may become filled with serum. In this case, there is produced a tumour, which disappears by compression, like a genital hernia; but which differs from it by its transparency and its elasticity. This tumour, however, must be maintained and reduced in the same manner as a hernia.

It is possible that a hernia, reduced at an early age and afterwards continuing to re-appear, may leave outwardly its bag, which becomes filled with serous matter. This tumour is then of an oblong form, and descends immediately along the inguinal ring. The testicle which is distinctly separated from it, is at its lower part. *Hydrocele.*

153. The interior surfaces of the articular capsules continually secrete a mucofo-albuminous fluid,

fluid, which in some exceedingly rare cases accumulates and produces a sort of dropsy. It takes place only at the articulation of the knee; and attacks only weak individuals disposed to exudations, especially after long repose. It is sometimes the consequence of an acute or chronic phlegmasia of that articulation, a blow received on that part, &c.

The tumour, in this case, is soft and fluctuating, projects chiefly on the sides, rises a little towards the thigh, and is circumscribed by the ligaments which fix the capsule to the bones. It produces no pain, and exhibits no alteration in the colour of the skin. It is often observed that the articular surfaces do not touch each other, or at least suffer themselves to be easily separated. The fluid contained in these tumours is not, in general, so aqueous as that of other dropsies; it is for the most part thick and ropey like the white of an egg. Sometimes the articular surfaces, when examined anatomically, are found altered, or even carious.

In this disease, to the general treatment of dropsies some local applications may be added: such as friction and topical stimulants. A small incision made on the exterior side of the articulation may be attended with some success, when the osseous parts are sound; in the contrary case, the disease is incurable. *Dropsy of the articulations.*

154. In the last place, a serous collection may be

formed in the areolæ of the cellular tissue, either of one or more parts, or of the whole system.

This disease is easily distinguished by an uniform swelling, without elasticity, which receives and retains for some minutes the impression of the finger. A mere scratch of the skin gives vent to the ferous matter, which proceeds gradually from cell to cell, and flows off slowly, but without interruption.

It is observed, in particular, among individuals of a delicate, effeminate and relaxed constitution, who live in a damp, gloomy atmosphere, and take little exercise; among those who have experienced violent evacuations, or long sickness; in a word, it may be produced by all those circumstances which tend to debilitate the organization. In these cases, it generally begins in the lower part of the legs; sometimes by an intumescence of the face, and soon spreads over the rest of the body. The skin becomes of a milky white colour, and colder than when in its natural state. The swelling is exceedingly soft, and, when pressed, the traces sometimes remain for several minutes. The pulse is slow, small, and faint; the patient has never great thirst, and the urine is not much coloured.

At other times, this cellular effusion takes place in individuals who are apparently in good health, and without being preceded by debilitating causes. In this case, it is often the consequence of some
organic

organic affections, and particularly of the heart, symptoms of which may have before been observed. It always begins in the inferior limbs, and its progress is commonly much less rapid; the swelling is less flabby, and the impression of the fingers sooner disappears. The face and skin are not of a pale and milky hue; on the contrary, the cheeks are striped with red, and the rest of the skin is more or less coloured: in certain places it sometimes appears erysipelatous. The pulse is often frequent, strong, and hard. The patient has a considerable degree of thirst; the urine is scarcer and of a darker colour.

There is still another case of cellular, or rather general dropsy, which takes place in the spring, among robust individuals, in the bloom of life, accustomed to succulent food, or who have been suddenly deprived of an habitual evacuation. In this disease, the skin retains its natural colour; it is firm, receives with difficulty, and retains very little the impression of the finger, and the pulse is full and hard. The exudation, for the most part, occupies the whole of the cellular tissue, and sometimes that of the inferior limbs alone. A collection is often formed in the large cavities.

This peculiar affection seems to arise from a general plethora, an overcharge of the system of circulation; for it readily yields to bleeding and to debilitating regimen.

Cellular dropſy is one of the moſt common. When it develops itſelf as a primitive affection, it is often accompanied by that of ſome of the cavities, eſpecially of the abdomen and of the thorax ; but very often it is ſecondary, and comes on after dropſies of theſe cavities.

In the firſt form, it is called by ſome phyſicians *leucophlegmaſia*, and affords great hope of a cure. In the ſecond caſe, this diſeaſe, much more dangerous, is diſtinguiſhed, by many authors, under the name of *anaſarca*. Plethoric dropſy may be eaſily cured.

155. All the areolæ of the cellular tiſſue, the membranes by which the three great ſplanchnic cavities are lined, that which covers the ventricles of the brain, that which envelops the cerebral prolongation along the rachis, the peritonæal tunic of the teſticle, the articular capſules, and all the cyſti, continually ſcrete an aqueous fluid, more or leſs charged with albumen and different ſaline ſubſtances. This liquor muſt be again taken up and continually carried back into the general circulation by the abſorbing veſſels. It is its accumulation in theſe different parts that gives riſe to the different kinds of dropſy, whether the ſecretion be increaſed, or abſorption leſſened ; and whether theſe two functions concur ſimultaneouſly by their derangement towards their formation.

When

When there exists a great degree of debility, the fluid seems to retain nearly its usual qualities; but in cases of phlegmasiæ, and particularly acute ones, it changes its character and becomes charged with albumen. Almost all dropies take place under the same circumstances: a relaxed debilitated constitution; weakness produced by tedious diseases and excessive evacuations; residence in low, damp, and obscure places; a sedentary kind of life; the abuse of tepid aqueous beverages, and the long continued influence of melancholy mental affections, &c. In another series may be classed organic alterations of the heart and large vessels, mechanical compression, external ligatures, a tumour in some of the interior viscera; and in some robust individuals a state of plethora.

In a third series are arranged acute and chronic phlegmasiæ, and all circumstances capable of producing permanent tumefactions, in certain viscera, in the lymphatic glands, &c.

When all these causes, capable of producing general or partial dropies, have exercised their action for a long time on the animal economy, the constitution slowly becomes weakened; the vital properties are gradually extinguished; the blood seems to assume a serous character, much more apparent; and all the secretions and excretions decrease. The whole body seems to dissolve into water, and the serous matter accumulates in

the areolæ of the cellular tissue and in the different cavities.

The principles of the treatment are founded, almost entirely, on a consideration of the circumstances which seem to have produced the disease, and on the particular state of the individual.

Plethoric dropsy yields for the most part to bleeding, to aqueous beverages, and to diet. That which exhibits all the characters of general debility, which has begun by occupying almost the whole cellular tissue, and during which no sign of organic alteration is observed, may often disappear by the continued use of tonics under every possible form: friction, exercise proportioned to the strength, internal medicinal and alimentary tonics, specific stimulants, &c. But great caution is required in that which is accompanied by an organic læsion or chronic phlegmasia of some viscus, and which may be aggravated by any stimulant. In a word, the most troublesome dropsy is that which results from an incurable organic affection.

To give vent artificially to the collection produces no effect towards the cure of the dropsy. It may even be said that this practice, for the most part, is soon followed by a more rapid accumulation; and that if the vital action of all the parts, and particularly of the absorbing surfaces, is not speedily restored, it then becomes necessary to recur to it at intervals progressively shorter.

There

There are, however, some cases in which the evacuation of the serous matter becomes beneficial, and contributes towards the cure; and even when the cure is deemed impossible, it often becomes indispensably necessary to evacuate the fluid, in order to prevent suffocation and to prolong life.

156. In countries habitually damp, but particularly in those which are damp and cold, those who have not an opportunity of sheltering themselves from that temperature, and who are besides weakened by bad nourishment, excessive fatigue, want, grief, and continual fear; sailors, soldiers, and other persons who are oftener or longer exposed to this concurrence of circumstances, are subject to a disease which announces itself by the following symptoms: the face appears pale and puffed up; the patient is sad and dejected; universal lassitude soon takes place, with numbness and weakness in the knees, after the slightest exercise.

The patient experiences a sensation of itching in the gums, which become swelled, and which bleed when in the least rubbed; they then grow soft, fungous, and of a livid red colour. Children often tear them off in fragments with their fingers.

The skin is often soft and shining, sometimes dry and rough; it becomes covered with red and blueish or black livid spots, of different sizes.

During the course of the disease the patient ex-

periences constant pains in the limbs, in the loins, and frequently in the breast. These pains, which are liable to shift, increase by every kind of motion.

In some individuals, a swelling takes place around the malleoli, especially in the evening, followed by an œdematous swelling of the whole leg, which yields very little to the pressure of the finger, and retains the impression of it. Sometimes tumours and nodes appear in different parts. In the course of the disease the legs bend, and remain in that state; pain and swelling take place in the knees, which sometimes acquire a monstrous size, and become covered with livid spots and hard tumours: at other times they are exceedingly wasted and dry.

When the affection has made considerable progress, frequent and copious hæmorrhagies take place from the nose, gums, lungs, &c. In some individuals, violent dysenteries come on, with acute pain; in others, pure blood is voided in large quantities by stool, without diarrhœa or griping pains.

The gums, exceedingly fungous, painful, and fetid, are sometimes profoundly ulcerated, and as it were gangrenous. The teeth become loose, and often drop out. Little fever, however, is observed; the appetite continues, and the patients retain the full use of their senses. While in a state of rest
and

and in bed, they experience no uneasiness; but have a great tendency to fall down on the least motion, especially when they have remained a long time without taking exercise; and they often die suddenly, when violently shaken or when removed into the open air.

Some have a dysentery or troublesome salivation; and there is then frequently observed an alternate succession of these two symptoms during every two or three days.

When it is possible to remove the individuals from the causes which produce and maintain this affection, it may be easily cured. Thus, when sailors, who have contracted this disease in the course of a long voyage, are carried on shore in a country the soil and temperature of which is dry and warm; if they find in it vegetables, fresh meat, and good wine; and if their situation admits of their taking a little exercise, their health is speedily restored. They are generally seized with a slight looseness; their gums become firm; their skin grows moist; the livid spots by which it is covered turn yellow and disappear; and all the other symptoms vanish in succession. But it sometimes happens that the disease terminates by a permanent disposition to chronic rheumatism, rigidity of the limbs, miliary eruptions; and there often remains a swelling of the limbs, with ulcers: sometimes there come on obstruction of the vis-

cera of the abdomen, dropſy, phthiſis, hypochondriaſis, &c.

In the laſt place, when the diſeaſe has acquired a greater degree of exacerbation, it exhibits the moſt irregular and moſt extraordinary ſymptoms; the ſcars of the old ulcers burſt; the callus of conſolidated fractures becomes ſoft, eſpecially in places where there appeared ſoft tumours; painful and livid, and theſe crevices degenerate into ulcers.

The ulcers, on removing the dreſſing, often exhibit a large clot of blood; they diſcharge only a fetid bloody matter, which adheres like glue around their ſurface; the fleſh below is ſoft and fungous; the edges are ſwelled and livid, or often hard and callous. In the further courſe of the diſeaſe there ariſes from the bottom of theſe ulcers a ſoft bloody fungus, which often aſſumes in one night a conſiderable volume, and, if not deſtroyed by cauſtic or the biſtory, reappears at the next time of dreſſing: when the biſtory is employed, abundant hæmorrhagies often take place. Theſe ulcers, which are exceedingly fetid, have a ſtrong diſpoſition to gangrene. A creaking noiſe of the articulations, eſpecially in young perſons, is often obſerved on the leaſt motion; in others a duller noiſe is heard in the breaſt, during reſpiration*.

Sometimes

* On opening the bodies, there is obſerved in the firſt caſe, a
loofening

Sometimes there come on violent colics, obstinate constipation; or the patients sink under copious evacuations of blackish blood from the urinary passage, from the rectum, the lungs, or the nose. The urine in general is reddish, turbid, thick, and fetid.

In some cases the face has been observed to swell, in the course of half an hour, in such a manner as to close up the eyes; and this swelling, which is directed towards the most declining part, alternately disappears and returns. At other times there comes on a prodigious swelling of the gums and cheeks; then gangrene in the lips, and caries in the jaw.

The pulse becomes small and frequent. The appetite, which in general continues unimpaired, at length disappears; and the thirst is increased: sometimes the patients, till the period of death, are tormented with a *fames canina*.

This affection continues several months, during which the individuals affected with it retain a strong disposition for contracting all the prevailing maladies of the time. In general, the most fatal complication is pernicious fever.

Towards the end of the disease, the patients

loosening of the apophyses with a swelling of the bones; in the second, a loosening of the sterno-costal cartilages and a solution of the spongy substance of the ribs. *Poupart Mém. de l'Acad. des Sciences.*

frequently

frequently experience a constriction and sort of oppression of the breast, with a difficulty of breathing and a pain under the sternum, and very often in one of the sides. Sometimes, without any pain, the respiration suddenly becomes short and accelerated; and, in this case, the patient drops down dead, even while walking.

On opening the bodies, a flaccidity and want of tenacity is observed in the parts; an extravasation of blood throughout the whole cellular tissue; a laxity in the articular ligaments, with an alteration of the synovia, which has become greenish and caustic; and, in the last place, caries or a softening of the bones. In those who die suddenly, phlegmatic affections are found in the thoracic or abdominal viscera. *Scurvy.*

The scurvy has been ascribed to the great quantity of salt provisions employed by sailors; to the want of fresh vegetables, to corruption of the air, shut up above the stagnant water in the bottom of the vessel, and to the vapours which arise from the sea. It is not probable that these circumstances are the essential and necessary causes of scurvy; but they must no doubt contribute to favour its progress.

This malady seems much rather to be produced by moisture.

The atmosphere of the sea, *cæteris paribus*, is constantly damper than that of the land; and sail-

ors are exposed to its action in the night as well as in the day time. If there be a long continuance of rainy and stormy weather, the sailors become wet by the fog, which incessantly rises from the sea; the men on duty on the deck are drenched by the rain; the water penetrates into the vessel; and as there is neither fire nor sun, nothing dries, and the moisture corrupts, in consequence of the necessity of keeping every part of the vessel close. The sailors, who sleep four hours in damp hammocks, and who then labour four hours amidst the rain and cold, while their clothes dry on their backs, seldom fail to become scorbutic, if they remain long in such a situation.

Moisture, though the essential and constant cause of scurvy, exercises a very feeble action on men who enjoy perfect health; who possess a great deal of courage; who are laborious, and do not suffer themselves to be disheartened by fear. It seldom attacks those who are sheltered from its influence by enjoying the conveniences of life; and hence we rarely find that naval officers are exposed to its attacks. On the other hand, it has a very powerful action on those who are weakened by anterior diseases; on those who are debilitated, indolent, lazy, timid, or peevish; and on those who use bad food, or who experience a want of provisions and of water.

The

The causes which produce scurvy, and those which favour its development, occur more frequently and continue longer at sea than at land; it is there more difficult to be sheltered from their action, and the disease of course acquires a greater degree of intensity, which makes it be considered as more dangerous. But the same causes are met with at land, and produce a similar affection; so that there is no essential difference between the sea scurvy and that which prevails at land.

Though it appears difficult to guard against the sea scurvy, it is possible to avoid it by proper precautions; the principal of which is to avoid dampness, cold, and excessive heat; to provide sound, wholesome, and varied nourishment; and to banish all melancholy moral affections. The celebrated Cook, during a voyage of more than three years, made such prudent regulations on board his ship, that of 112 men, of which the crew consisted, he lost only one, who had been in a bad state of health before he embarked; and yet the causes of scurvy were so strong that even the sheep seemed to be affected by it, as was discovered by the swelling in their gums, languor, loss of appetite, &c.

In places where rains are frequent and dampness continual, as at Fort William in Scotland, in marshy countries surrounded by thick forests, often inundated and covered by stagnant and corrupted

rupted water, scurvy is endemial. It is most common among poor people, who lead a lazy indolent life; and among shoe-makers, taylors, weavers, fishermen, &c.

Scurvy has been epidemic in Iceland, Greenland, and in the northern parts of Russia: it is infallibly produced by the thick fogs and bad nourishment of the inhabitants. Formerly the scurvy was endemial in Holland*; but at that time this country, exposed to frequent inundations, was almost one immense marsh. At present, the land being drained, the houses healthier and cleaner, and the people better fed, this disease has disappeared. It is now observed very rarely, and only in the lowest and dampest places, and in individuals among whom scarcely any change in their mode of living has been introduced: that is, where the houses are low, dirty, and badly lighted; where the food of the people is salt pork or bacon often rancid, with coarse bread; where the waters are in a state of stagnation, &c. This affection has also reappeared, under an epidemic form, during several wars, but always after inundations, in consequence of the sluices being opened.

The scurvy, which was frequently epidemic also in Lower Saxony, in Denmark, Sweden, and Nor-

* It was from this country that the first and most correct descriptions of this disease were obtained.

way, has now ceased in consequence of the same general causes of salubrity. The houses, in these countries, are more elevated and more commodious; the waters can more easily be drained; the use of wine and beer is more general, &c.

Several authors have been of opinion that scurvy is contagious. Its epidemic character alone must have given rise to this idea, which is not confirmed by experience: besides, the well known nature of this malady, and various facts, will not admit of our believing that it can be communicated by contact.

In the scurvy, the long continued action of dampness, favoured by many other accessory debilitating circumstances, seems to have a tendency to weaken the action of the muscular organs, and that of the capillary vessels. A want of mobility in the articulations, indeed, takes place; the motions of the limbs are performed only with pain and difficulty; the fluids do not circulate freely to the extremity of the vessels; they seem to exude, as in dead bodies, through their weakened sides, and to discharge themselves into the cellular tissue, or to produce hæmorrhagies. A kind of death, therefore, takes place at the surfaces, which seems to arise from a commencement of decomposition, modified by a remnant of life: these accidents produce others more dangerous and
further

further extended, which at length extinguish life completely.

A great many peculiar circumstances, besides dampness, may slowly conduct to a state similar to that of scurvy ; and many chronic diseases, such as phthisis, cancer, dropsy, &c. seem all to terminate by a sort of scorbutic affection.

END OF THE SECOND VOLUME.



